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The CARS
In Concert

Suzanne Ciani
Synthesist

Pat Metheny
Jazz GRist

Steve Howe
Asia GRist

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The Magazine For The Electronic Musician

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LETTERS LETTERS LETTERS

INSIDE A JX-3P LOOKING OUT

Three months ago I purchased a JX-3P. A number of years ago, I was introduced to synthesizers on an old SH-1000 that I borrowed from a friend. Approaching the JX-3P with a bit more knowledge and experience, this synth has met up to every one of my expectations and beyond. The sounds are incredible; some of the presets I don't even touch because they are so good just the way they are. Furthermore, with the PG-200 programmer, I have explored and experimented, coming up with patches of my own that are great. The JX-3P has proved to be an excellent tool for creative expression. I have even come up with new ideas as a result of simply "fooling around" with the presets and the PG-200.

In an effort to extend my knowledge of electronic music even further, I also bought the set of four books collectively entitled *The Synthesizer*. I have just begun to really read them, but already I have gotten new insights on different concepts of sound and synthesis with which I was already familiar. I can easily see how the more I can learn about the principles and technology behind my machine, the better a synthesist I can become. Moreover, using my synth in conjunction with the different sections of the texts, I can apply exactly what I read. By the time I finish with these books, I will have mastered my instrument from the inside out.

My JX-3P is only one component of the home studio with which I am involved. However, my studio is far from fully equipped. I am very interested in purchasing other Roland products for this studio as I have grown to trust the Roland name. Finally, I would like to be placed on the mailing list for the Roland Users Group magazine, so I can keep up with all Roland developments.

Once again, thanks for your great line of products and keep up the good work!

Alan Frost
New Rochelle, New York

RUG: To become a really effective synthesist, you have to learn the basics. The Synthesizer is one of the few short-cuts available. When you sent in your warranty card, you were put on the RUG mailing list.

A NEW BEST FRIEND

My name is Alisha Ali, and I'm fourteen. I've got a new best friend, my Juno-106. Out of all the synths I've looked at, the Juno-106's overall sound is the best, as is its MIDI capabilities. And 128 programs. Wow!

I learned more from your books on electronic music and synthesis than in all of third term last school year. Thanks also for the Roland Users Group magazine. It's great! You'll be getting a lot more money from me in the future (at least from my parents). I'm also going to get the MSQ-100 sequencer and the TR-909 Rhythm Composer. Is it possible for me to get Roland software for my Apple II plus computer?

You're doing great, Roland. Keep it up!

Alisha Ali
Winnipeg, Manitoba, Canada

RUG: Sounds like you're doing great yourself, Alisha. You keep it up.

THE CLASS OF CLASSES

I am an elementary music teacher (grades K-sixth) in the Deer Valley School District in Phoenix, Arizona. Realizing the advances in technology and the impact this technology will have on the future of music production, my school has purchased two electronic keyboards, two synthesizers, a drum machine, a computer system for use as a sophisticated sequencer, and a four-track recording system. These purchases were made over a two year period with monies from fund raisers as well as district funds.

The equipment has been used for choral productions, recordings, school performances and shows. Recently, I started teaching a class on "Basic Synthesis" for fourth, fifth, and sixth grade students who play the piano. I hope to extend this class to the entire sixth grade. My objective is to give children some insight to the direction music will be taking in the future. I believe the technological advances in electronic music production are an excellent way to enlighten and motivate anyone, especially children! With the continued support of my administration, I believe my objective will be reached.

Jerry Lopatin
Phoenix, Arizona

RUG: We wish your classes were around when we went to school, Jerry.

DUSTBOWL JUNO

I play keyboards in the Ed Bruce and the Tennessee Cowley Band. Ed is currently on RCA records. The band plays in all types of conditions from state fairs and stadiums to rodeos and honky tonks. We do one-nighters all over North America. In the fall, we will be performing in Europe.

Recently I purchased a Roland Juno-106 and I want to let you know that it holds up under the most brutal conditions. It rides in a case in the locker of our MCI tour bus, sometimes thousands of miles in a week, and plays perfectly every night. We recently played an outdoor show in Billings, Montana at the Yellowstone Exhibition Center for 8,500 people. It turned into a dust storm when all those people started dancing on the infield of the race track. Two nights later when we did our next show in Tulsa, Oklahoma the Juno was ready to go. The Juno sounds great, but equally as important it is rugged and dependable.

John Mattick
Nashville, Tennesee

RUG: It's nice to know a Juno can take a licking and keep on pickin'.

Random Noise

Random Noise spotlights the current activities of Roland and BOSS users. If you have news that you think will interest the readers of RUG please notify us.

by Cristy Robertson

Who you gonna call when you need a hit theme song for your movie? **Ray Parker Jr.**, that's who. When you call Parker you'll also get the help of his MSQ-700 and Jupiter.

Rock and Roll pioneer and longtime **Elvis Presley** sideman, **James Burton**, doesn't need effects to wring great music from his paisley Tele, but even Burton can't resist the BOSS chorus.

Daryl Stuermer, who has played with more big names than the Old Testament has begats, is currently touring with **Genesis**. Stuermer uses a GR with G-303 controller and an effects system that includes: BF-2 Flanger, SD-1 Super Overdrive, DS-1 Distortion, and CS-2 Compression Sustain.

Helping the **Jacksons** beat it on down the road on their thrilling *Victory* tour are: JP-8, MSQ-700, TR-808 played by **Pat Leonard**; JP-8 played by **Jai Winding**; and still another JP-8 and MSQ-700 played by **Randy Jackson**. The Jupiter is definitely the "P.Y.T." of the tour, but we hear that **Tito** and **Jermaine Jackson** also like the GR-700 a lot.

Peddling *Flesh for Fantasy* on the American concert circuit, **Billy Idol** has a band of Roland users. GRist **Steve Stevens** uses the new GR-700 with G-707 controller, while keyboardist **Judy Dozier** uses a Jupiter to flesh out the sound.

Dave Stewart of the **Eurhythmics** has been seen sporting a new G-505MR guitar controller on the group's latest tour. Dave is the one with the beard, no, wait a minute. Is that **Annie Lennox?** Oh well, Dave is the one with the red GR.

Charlotte Caffey of the **Go Go's** has also been seen sporting a pretty new GR. Caffey's is a white G-202.

Attracting a crowd and causing

Billy Idol and keyboardist Judy Dozier.

quite a scene is **Quiet Riot.** Bassist **Rudy Sarzo** uses a GR-33B with a G-33 bass. Guitarist **Carlos Cavazo** uses a BOSS Chorus, Delay, PSM-5, and (what else?) Heavy Metal Pedal. Hey Carlos, can I have a ride in your new Ferrari?

Let's hear it for **Deneice Williams** and her new album! **Jeff Baxter** uses a GR system for the synth break on "Blind Dating". Other Roland products helping out are a BOSS Chorus used by **Russell Ferrante**, a JP-8 used by **George Merrill**, and a Juno-60 used by **Leon Pendarvis**. Let's hear it for those boys and their Roland gear!

Though the **Thompson Twins** look more like triplets already, they're adding yet another dimension to their act, a Dimension D from Roland. The Dimension D has been around quite a while, but is being heard more than ever as more artists get hip to its "psycho-acoustic" properties. I used to have some

Eurythmics Dave Stewart and Annie Lennox.

Andy Summers in his London studio with Roland Rep Ken Zemanek

psycho-acoustic properties myself, but I flushed 'em one night when somebody strange came knockin' at my door.

They may be "Dancing in the Dark" backstage but nobody can disguise the great job the Roland SDE-3000 Digital Delays do for the Claire Bros. on the road with **Bruce Springsteen.** Claire Bros. also have the DDL out with **U-2,** it gives them the edge they need.

Baseball, hot dogs, apple pie, and Roland? You bet your buns! **Rick Janssen,** official organist for the Kansas City Royals, uses a CR-8000 Compu-Rhythm to beat out the seventh inning stretch. Pass the mustard.

For sports of a different kind, **Mr. Billy Ray Smith** (all inside linebackers should be addressed as **Mr., Sir, or From Long Distance)** of the NFL San Diego Chargers owns a Juno-60 and a BOSS BCB-6 full of effects. We hear **Mr.** Smith is quite a musician too. Where does he play? Anywhere he wants to.

After sports? More news! No, not film at eleven (ten Central), but **Huey Lewis and the News.** Newsman **Sean Hopper** has been making headlines in the feature section with his JP-8. Back to you, Sean.

Sly **Paul Fox** used a TR-808 on the **Pointer Sisters'** latest LP *Break Out.* Producer **Richard Perry** used a JX-3P and JP-8 to make the arrangements jump for it, right up the charts.

Dozing off? **The Alarm** will wake you up with their unique sound. The

band uses two JC-120s, a Space Echo, and a MC-202 MicroComposer.

Ebn of **Ebn Ozn** (try using that in your next Scrabble game) has been using a GR-700 and G-707 on the group's latest. You ought to hear these guys do "Rockin' Robin" with vocoded vocals, it's a gas (make that

Charlotte Caffey of the Go-Go's, and her white G-202

Photo by Ebet Roberts

Gzn). Before you write, I know, "no proper nouns in Scrabble."

Okay, maybe we shouldn't say anything, but regarding the OLYMPICS!!!!! Not subtle enough? Anyway, one of the most beautiful themes (musical) for the opening ceremonies was **Philp Glass'** composition. Glass uses a MC-4B in his work. The official MicroComposer of the . . . never mind. Any Olympic pin traders out there, let me know what you've got to swap.

GRist **Jeff Beck** has been busy as a lone rooster in a big old chicken yard (Yardbird). He's been working on albums with **Stanley Clarke, Vanilla Fudge** (great to have them back), **Tina Turner, Rod Stewart,** and a **Nile Rodgers'** produced solo album. Jeff also wins the Random Noise prize; "The artist that allows us to get the most prominent names in RUG award."

Bassist **John Regan,** no relation to Ray Gun, is back working with GRist **Peter Frampton.** Frampton just added a Roland Digital Delay to his rig and will have a new album out for the Christmas season. Frampton fell in love with the GR-700 when he was it demon-

strated at the summer NAMM by Roland's own Mark "Auto-cruise" Altekruse.

Tommy Tedesco is another top name artist who is enthusiastic about the GR-700. Tedesco sat in at NAMM and really knocked people out by playing some fantastic bebop organ ala GR. Tedesco's technique is so refined that blazingly fast solo lines came off without a glitch the very first time he ever laid hands on the instrument. He tells us that **Larry Carlton** and **Tim May** are also new GR-700 converts.

"You Might Think" it's magic the way **Elliott Easton** of the **Cars** gets his hot-rod sound, but it's not. Easton uses a Roland GR system, a JC-120 amp, SDD-320 Dimension D, and SBF-325 Stereo Flanger. His compact effects are all BOSS: Chorus, Delay, Heavy Metal, Octaver, and Compressor. Love that burgundy purple mist guitar!

Purple mist to *Purple Rain,* how's that for a transition folks? The **Prince** of rock has been seen on stage with the BOSS, not Springsteen. But his band reportedly uses as many as 40 BOSS effects pedals and SCC-700 sound control centers. Included in the BOSS array are: OC-2, DD-2, CE-3, GE-7, CS-2, VB-2, and BF-2.

Robbie McIntosh may be one of the **Pretenders,** but his guitar chops are for real. McIntosh use a SRE-555 and assorted BOSS units

including; Chorus, Compressor, and Delay.

Bass GRist and all around good guy **Nathan East** can be heard on **Donna Summer's** new LP, *Cats Without Claws.* According to **David Bowers,** East is currently west working on **Kenny Loggins'** new effort. Recording at Sunset Sound in Hollywood, Loggins is also using Roland JP-8, JP-6, SDE-3000, and CE-2 on the project scheduled for a November release.

Stan Ridgeway of **Wall of Voodoo** (I love that name) and *Rumblefish* fame is using his new JP-6 and MSQ-700 on an album project with **Bill Nolan.**

Sparks are lighting up the sky and slipping off to "Cool Places" with you and their JP-8s (3), MSQ-100, MSQ-700, and TR-909. The band will be releasing a new album soon.

You say you want legs? **ZZ Top** delivers, at least in song form, with a TR-808 driving a Juno-60. Hope they didn't paint 'em Candy Apple Red. **Billy Gibbons** just bought a TR-909 and is in the market for a GR-700 with tuck and roll (or is it rock and roll) upholstery.

Electronic music pioneers and video masters, **DEVO** are exercising their freedom of choiced on *Shout!* The band uses a large number of Roland products on the record including: JP-8, JP-6, MSQ-700, and DD-2. The band also uses some variations-on-a-Roland-theme instru-

ments created by technoid wiz and Roland chief engineer **Jim Mothersbaugh.** Rumor has it that the new album cover features **Timothy Leary's** son. Hope the spud boys leave their experimenting to music and recombinant DNA.

A band everyone is happy to see back together is **Yes.** The band is getting a big 10-4 on their *90125* LP. **Tony Kaye** uses a JP-6 and JP-8. Sideman **Casey Young** is playing a JP-8 and Vocoder on the band's tour. Don't look for Young unless you have a backstage pass. Young is doing his playing from the wings. We give the band's tour and record performances a resounding "affirmative."

Here's a hot tip. A band named **Cock Robin** has just been signed by Columbia. The band's first record will be produced by **Steve Hillage** and should be out in January. Cock Robin's guitarist **Clive Wright** doesn't go on stage half-cocked; he's accompanied by his GR system with two G-505 controllers (one red and one blue), JC-120, SDE-3000, SCC-700, CE-2, CS-2, HM-2, and GE-7. Pick up on this group early, they're hot.

That's all for now. Remember, keep us posted on the activities of your favorite Roland users. Try as I might, I just can't attend every backstage party. It's a dark and dirty job....

⧉Roland

Jan Hamer, CBS newsperson and GPI publisher Jim Crockett with Juno-106

BX-800 Versatile Stereo Mixer

Quality reproduction in situations from stage mixing to personal recording characterizes the performance of the BX-800 eight channel mixer from BOSS.

Two input levels and individual gain controls on each channel allow the BX-800 to handle a wide variety of instrument and microphone feeds. Each channel also has individual overload indicators for quick and easy identification of problems.

Treble and Bass equalizers give plus or minus 10 dB adjustment capability at 10 kHz and 100 Hz respectively. Effect level control, panpot for stereo imaging and volume slider are also utilized on each channel.

The Master section contains LED level meters for each stereo channel, a headphone jack with separate level control, an effects volume for the Effects send and Return, and two slide volume controls.

The BX-800 provides high performance features and flexibility in a compact durable package and is priced at only $360.

TU-12H Chromatic Tuner

Now the "no more loony tuning" tuner is available for acoustic string and wind instruments. The ultimate "hands-off" tuner has been packaged with a new high-sensitivity condenser microphone for perfect tuning of sometimes problematic

BX-800 Stereo Mixer

woodwind, brass, and string instruments.

A digital processing system detects the note upon input and shows the note's value via LED indicators. A VU meter then shows the degree that a note is sharp (50 cents) or flat (50 cents) and a sharp or flat arrow lights. Both arrows light when the note is correctly in tune relative to A = 440Hz. The LEDs and arrows provide a bright enough display to be read on a dark stage or orchestra pit.

Two different tuning ranges can be selected. The low range is the same as that used on the TU-12 and is best suited to guitars and basses. The high range accommodates instruments with higher tonal ranges like flutes, piccolos, alto and soprano saxes, etc.

Input and output jacks are provided for use with electric instruments. These may be used in a "straight thru" sense on stage with no treble loss. The TU-12H fits easily into even small instrument cases and carry bags. The TU-12H sells for $89.50.
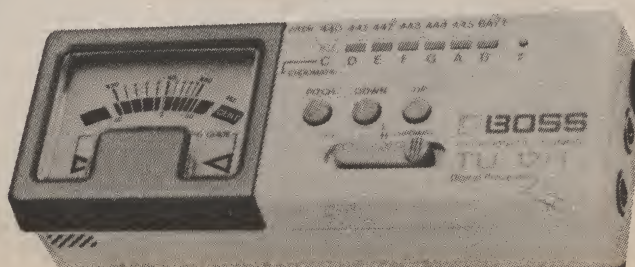
TU-12H Tuner

PH-2: Super Phaser in Stereo

The PH-2 Super Phaser is the world's most advanced compact stereo phase shifter. A twelve stage phase shift circuit is combined with two distinct and selectable modes of effect to give the user an unprecedented variety of phase effects.

A Rate control provides variable sweep (LFO) speeds from 100 milliseconds to sixteen seconds, which is a broader range than any other compact phase shifter. Precise notch adjustments can be made using the Depth control. And the Resonance control adds a deeper sounding phase by regenerating the already phased signal beck through the circuit.

A nine volt battery or ACA-120 adapter may be used to power the unit which sells for $149.50.

DM-3: Stereo, Compact, Low Noise, Analog Delay

A stereo analog delay in the famous BOSS compact format, the DM-3 offers up to 300 milliseconds of delay with its own noise reduction circuitry (residual noise rating of −100 dBm IHF-A).

A tremendous number of effects are available, in stereo, within the unit's delay range. Rate and Intensity controls set the length of delay times and the number of repeats. The Echo control sets the precise balance between the delayed signal and the direct, non-delayed, signal. The famous BOSS FET on/off switching is used and the DM-3 can use battery or ACA-120 adapter power. The DM-3 gives its user professional stereo delay for stage or multitrack studio for only $189.50.

Loony-Tuning TU-12: No More Tuner

The TU-12 is the first no-hands tuning device that carries the BOSS name. Advanced digital processing allows the TU-12 to perfectly tune the guitar, bass, or any instrument without changing switches. By selecting the guitar or chromatic mode, the user is able to tune the instrument in a downward or upward progression of pitches.

The tuning is displayed in two ways, making the read-outs simple to see at a glance. Both a large meter, and a LED display monitor pitch accuracy. Tiny and compact, the TU-12 can be carried in your pocket or instrument case. It provides in and out connections that can be used between an instrument and amplifier. The unit also possesses a microphone for the tuning of acoustic instruments.

The TU-12 will operate under battery or AC adapter power and is priced at only $89.50.

PH-2 Super Phaser

DM-3 Analog Delay

TU-12 Tuner

Steve Howe

Yes and Asia: Nearly Fifteen Years at the Forefront of Rock

Courtesy of Brian Nunney, Roland UK

In Steve Howe's nearly 15 years at the forefront of the "artsy" contingent of the rock cadre, he has been an avid experimenter with the sound of the guitar. He has never lost sight of the essential qualities that make the guitar such a powerful sound in rock music. At a time when Howe is finishing the third Asia album, he is using the GR-700 Guitar Synthesizer to extend, but not replace the Howe sound.

"I'm fundamentally a guitarist" he pronounces with a degree of understatement. Still a little resentful of the media term "techno-flash", he maintains everything he does is a result of his relationship with this one, highly individual instrument. "Technology is fine, provided it doesn't take away your identity as a guitar player. McLaughlin did two albums using equipment that made him sound like a keyboard player.

But why go to all that trouble just to play a keyboard sound on guitar? There are some things you play on a guitar that a keyboard player couldn't come near. That's what I always wanted. I can remember once saying to Robert Moog, that what was needed, what's always been needed is a guitar synth that's wholly unique. The GR-700 is really the first. It's somewhere we can start from."

Music, for Howe, begins and ends with the guitar. He plays mandolin "adequately" and has a more than nodding acquaintance with keyboard synthesizers, but a Martin 0018, Gibson ES Artist, or Roland G-505 are his real creative outlets. Regarding technology, he's adamant, "Listen to Segovia or Julian Bream. Listen to the emotion they put into playing. Who's going to replace them? Not a computer, Me!" The last word escapes suddenly, as

though Howe surprises himself by this revelation. The guitar synth and all the experiments preceding it are valuable precisely to the extent that they play a part in this guitar player's personal Odyssey.

"The pedals were the first thing; a fuzz box or maybe two fuzz boxes, a wah-wah and a volume pedal and footswitches for the reverb and tremelo on the amp. Then I started playing a lot of steel guitar and the pedal board was adapted to an effects side and a steel side. Then I thought, 'Why not use the steel side and that amplifier with the straight guitar amp and work with a stereo sound from two amps on stage.' Later came rack mounted effects and a period when I used the echo a lot. Always oiling and changing heads, it was a bit like looking after a baby. To me, Yes was a great opportunity to experiment with equipment."

"Guitar synthesizers? Well, at first they were just a horror story. I had someone approach me with a system which was very expensive and was easily the most unreliable, inconsistent piece of equipment I ever owned. It was terrible. It was supposed to be polyphonic, but it only worked in mono, and it tended to disintegrate when it was taken on the road. In fact, I looked inside and there wasn't anything holding it together. So we had problems getting it serviced. The makers wanted to back out of service commitments and brought in all this red tape and, of course, guitarists don't keep very elaborate paperwork. In the end, that escapade finished rather badly."

What kept him trying after the bad experiences? "The synth was unpleasant to play. When I played it, I couldn't wait to play an ordinary guitar, but when I listened to the tape, back, in amongst all the

glitches, there definitely was something there."

"After that there was a gap of two years when if anyone said, 'guitar synth,' I'd say, 'Go away!' Electro-harmonix produced a monophonic system which I used on *Tormato*. That was the one before *Drama*. It was, possibly, the most dreadful album Yes did. But, at the time, we were in Mickey Most's studio and Chris Spedding had a GR-500, Roland's first guitar synth. This was about 1979 and everyone's reaction was, 'Wow, what's it sound like?' But nobody really knew, at that time, what to do with it."

There were others. Steve recalls one that involved "About six amps and six speakers; it was really all over the place." Significantly, he had no time for such stuff, reaffirming the guitarist's view that, "A guitar is a force coming from one place."

"When the Roland GR-300 came out, I bought one instantly. It was good, but at the time, I wasn't very keen on the particular guitar that came with it. Then the G-505 came along, the Strat-type guitar controller, and for me, that was it. I go through periods where I dabble with Strats; I'm a secret Strat player. I like the clarity of the chords for some things. So when the G-505 came out, I started doing quite a lot of Stratting, with the GR. It's particularly good, because you can switch back and forth between 'straight' and synthesized sound. The guitar's sound works well with the synth sound."

With the advent of the GR-700, Howe became a confirmed GR man. "Roland has built the standard instrument now; the starting point."

Howe continues to control his new GR-700 module with the G-505 he acquired for his GR-300. "I'm

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basically a conservative and the new guitar (G-707) with the tie-bar doesn't fit with the way I look at guitars. I like 'huggable' curvey shapes." He is, however, taking advantage of another Roland service. One of the prized ES Artist guitars, already full of active electronics, is currently in the process of having its circuitry re-arranged for the additional electronics of the Roland GR controller (LPK-1). Modifying a favorite axe in this way is testimony to how seriously Howe takes the new concept.

"I think for the music we're making, the GR can be used to great effect. All those built-in sounds and the ability to modify them; it's something that just hasn't been available before. The whole effect is fascinating. I've see Midge Ure on stage with one and it's really weird to see a guitarist hit the strings and the sound of a bell rolls out."

But if you have a synth player in the band, particularly one with the skill of Geoff Downes, is there any need for a guitar synth?

"The thing is to remain in control. Our best music is me sparring with Geoff. He usually writes things that are hell on the guitar and I write things that are hell on keyboards. We spark each other off. I don't want the same things he does, but it's amaxing that this guitar synthesizer can open up so much. Over the last four years I've watched Geoff with his typewriter (Fairlight) open-mouthed about how a musician like Geoff can contain all this technology. I want that, but I don't want to copy him. I still want *not* to sound like Geoff. But now he's all MIDIed up and the GR-700 is MIDI, so you have all sorts of new possibilities."

Howe foresees exploring sequencers through his new setup. "Riffs are the greatest thing for a guitarist. The other day we were in the studio playing (he hums a guitar riff from Lennon and McCartney's "I Feel Fine"). What a riff! A sequencer can do all those things that you'd have to spend hours putting down on tape. I've already done a lot of that using the Hold on echoes. I use Roland echoes too."

"My idea is to be the Vangelis of the guitar. He has this remarkable ability to improvise and make it sound like it's not improvised. That's an ability of mine that was hidden in *Alpha,* but it shouldn't be hidden."
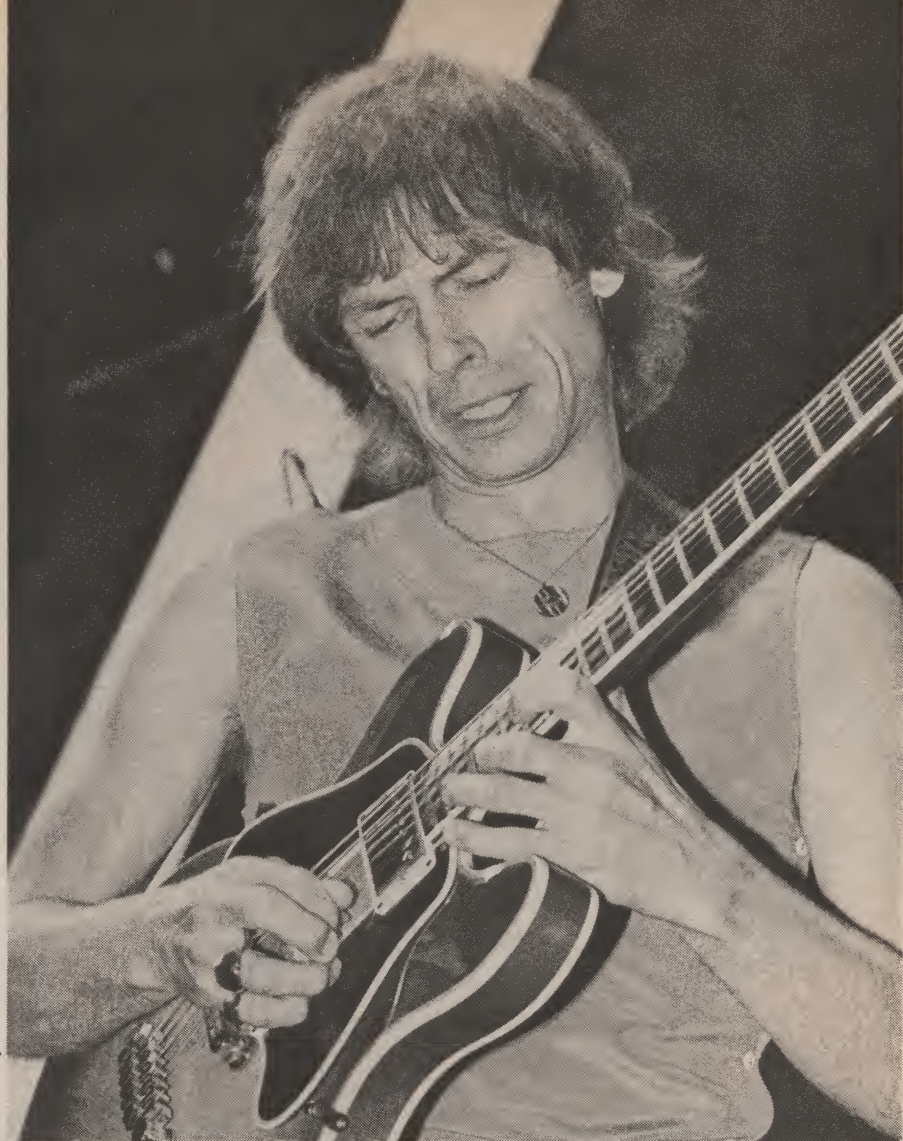
"The guitar synth is something I need to assist me. To assist me in becoming a guitarist who's great, and who's remembered. Success now, is not so important to me. I'd be content to be unrecognized now, but recognized later. And the greatest honor, would be recognition as a great improviser."

Howe values spontaneity and emotion and is wary of technology that gets in the way. He laughingly describes a potential studio conversation degenerating into an alphabet soup of anagrams. "Put the CMI through the MPU with a CMS MIDIed to an MSQ." Howe is wary of becoming a preprogrammed artist that strolls on stage, pushes a button and "spins it off."

The relationship between the player and the instrument is too important, the problems are too important, the struggle is too important. Howe recognizes that an audience's response depends on their appreciation of the artist's skills. They can be thrilled by the way a guitarist rushes a fast scale up the fretboard, but not by the way a computer does the same thing.

The guitar synth, to Howe, gives the best of both worlds because it maintains the unique articulation and playing techniques of this very personal instrument while opening the timbral vistas and data handling sophistication of modern electronics.

"Fundamentally, I'm a guitar player. I never knew I had a sound until recently, but I do and I don't want to lose it. So now I would say I work with three sounds, or sound dimensions. First of all, the straight guitar; second, the guitar through the pedalboard; third, the GR-700 guitar synthesizer. Switching between the three and letting them interact is my biggest inspiration for writing and improvising."

Asia's third album is being recorded now, possibly for release for Christmas.

≣Roland

MIDI, SMPTE, FSK: Code Systems Explained and Chronicled

by Dick Rosmini

Using codes to store and transfer information is not a new idea, by any means. We write notes on paper to represent musical sounds. We use an even more complex system of symbols on paper to represent the sounds we use as language. And speech itself can be thought of as a sound "code" for the transmission of human thought, needs and ideas; in fact, the invention of a spoken language is considered by many historians to be the most important piece of "technology" the human race has ever produced.

Historically speaking, the upright ape with clothes on has always thought that improving the communications system was worthwhile, so in the not-so-distant past, technology began to support the concept of "code transmission" with more than just the basics of paper and writing tools. We now accept and use the camera, typewriter, radio, television, and other tools used to code and transmit information that technology has developed over the last 200 years.

With the advent of MIDI, Musical Instrument Digital Interface, things that can be reduced to codes now include the performance of music on a microprocessor-driven musical instrument system. MIDI does not transmit, store, or edit the actual sound (we have had several methods of doing that for a long time), it codes the mechanics of the performance itself. With MIDI, mechanical details such as key depressions, patch/program settings, and lever positions can be coded, stored, and transmitted over a wire from one musical device to another. Play on one keyboard, and the wire will transport the information to another and you'll get two instruments to play instead of just one. Add a sequencer or a home com-

puter to the MIDI system, and you'll be able to "Write it" once and get the computer to play it over again later.

Now comes the problem: There are a lot of codes, buzzwords, and owners manuals out there to sort through. If you want to take advantage of MIDI to expand the functions of your synthesizer and sequencer system, you need to know which MIDI codes do what before you buy. In order to get the benefit, you will have to learn to "speak the language." Cheer up. The truth is that dealing with all these new codes is much more like learning to drive a car than it is like learning another language. A car represents an enormous amount of technology, but everybody knows that you don't have to build one from scratch just to drive it. Most people get along just fine if they learn where to put in the gas and check the oil.

You learned the buzzwords of driving a car one at a time, and understanding MIDI will be the same. It's just one more step in the long road of digital technology that can be traced back at least 170 years; one little step at a time. Many old terms that are confusing now made perfect sense when they were fresh. Read these pages, and we'll explain how the technology grew, what the buzzwords meant, and why the decsions were made. For those of you who don't own your own computer system, we're going to start with the basics of digital technology, so there won't be any doubt about the terms. After we're finished you may decide that MIDI is not so hard after all.

Codes; Systems and Solutions

In the design of any system for the transmission of information, the

designer begins with these things:
1. *How many different things must we transmit?*
2. *What are technical capabilities and limitations of the transmission system?*
3. *What has to happen at the receiving end for the transmission to have meaning? In short, how will the decoding be accomplished?*

In the system of writing, the dexterity of the human hand sets the size of the character; the resolution of the human eye defines how small a character can be read; and the need for convenience, economy, repeatability and portability eventually modifies the printing mechanism until we have paper, movable type, and the book. The whole system grows to suit the needs of the transmission. We have come a long way from the basic "technology" of the chisel and stone tablet. But throughout, the human eye, hand, and brain perform all the hard parts of generating and decoding the information. You have to be taught how to read and write: that's obvious. But there are things involved that you might not consider; such as where to begin reading a page; and which cover of the book to open to get to page one. The way that machines "read the book" is an important part of understanding why a code system is built the way it is — and when we get to the MIDI system, the reader will be a computer, not a human. You will need the background in order to understand the computer's concept of "pages" and "front covers" as they relate to MIDI and digital technology.

What came first? The digital concept begins with one invention:

The Telegraph

With the advent of the telegraph, we added the enormous benefit of

MIDI signal =	———————	
Audio signal =	··············	
Sync 24 =	··················	
SMPTE =	∿∿∿∿∿	
Time Base =	··············	
Patch cable =	———	
DCB cable =	·-·-·-·-·	

DCB cable (H-172)

MD-8

MIDI in

JUNO-60

MIDI thru

MM-4
MIDI Thru Box

MIDI thru

MKS-80

MIDI in

MKS-30

MIDI out

MSQ-100

Sequence
Controller

MKS-10

VTR

Audio Tape
Recorder   OR   Video Tape
Recorder

SMPTE in

SMPTE out

MIDI
out

Sync 24 out

TR-909

SBX -80

Rhythm Composer

Sound
Source

Mic amp

Manual Tap of Tempo

Variable
Time Base
out

Clock interface
with Time Base of
1 , 2 , 4 , 12 , 24 ,
48 , 96 or 120.

to Mixer

MIDI System using SMPTE and a variety of Instruments.

Roland

instantaneous delivery to our system of written communication, but the addition of that first electrical link forced a major change in the method used to code information: Because the first telegraph could not transmit sound or text in a directly perceivable way, we couldn't use the same code of letters and numbers that we had used on paper. An alternate code system had to be designed that would fit the technology available. When Samuel F.B. Morse obtained his first patent on the electrical telegraph in 1834, the technology he had to work with was pretty primitive. At first, the only thing that you could do with the telegraph was to make and break the flow of electricity with a key. Since on and off were the only "symbols" available, the "long on," "short on," and "space off" were combined to form the dot and dash code for letters, called Morse code.

The first practical telegraph mechanisms used a relay to raise and lower a pen to mark a moving roll of paper. The marks were then decoded by the person at the other end of the line. The system worked, but it had its share of growing pains. In an attempt to simplify, the pen and paper were replaced with a buzzer, and the receiving operator was given the job of writing down the long and short buzzes.

Transmitting ten words a minute took a lot of practice, and thirty words a minute was expert-level speed. Faster? Possible, but you had to worry about the skill of the guy at the other end of the line. All these problems were accepted gladly. The benefit of speed in transmission was well worth the inconvenience of learning and deciphering the code.

This new system of information transfer depended heavily on human physiology as well as the primitive electronics. The human hand was the code generator, the human ear was used as the code detector and the human brain was the computer used to decode the information. Primitive? Sure, but it was lots faster than the pony express, and in 1867, when the first transatlantic cable went in, the ten to twenty day

sailing time for getting a message to England was cut to zero.

The Great Split

In 1876, Alexander Graham Bell invented the microphone and technology began to build the pathway leading to the electric guitar and the high-power P.A. system, but the world of on-an-off pulses kept right on going. Why? With voice communication available, you would think that we would have abandoned the on-off idea and cut out one unnecessary step of code with a sigh of relief. Unfortunately, this first shot at the audio transmission system wasn't good enough to send speech more than a few miles, while the telegraph was working reliably across oceans. By the time the audio system was capable of spanning 100 miles, a new type of player was added to the system, and it has kept the on-off guys going to this day.

The Teletype

The big change here was that the receiver was not a human. For the first time the system decode function was, in part, handled by a mechanical device. This electric typewriter with a mechanical "brain" ate code and converted it to alphabetic characters without the aid of a human!

To get information down the single wire transmission line, the first teletype code used simple pulses similar to the dots (short ones) of Morse code, in on-and-off groups of five. Why five positions in this new code "word"? Let's work it out.

One switch = two unique conditions, on or off

Two switches = four possible results, all different

Three switches = eight settings

Four switches = sixteen combinations are possible

Five switches = 32, and for the transmission of the alphabet, we hit the jackpot.

Five switches could be arranged in 32 possible combinations. Since 26 uppercase letters were what we wanted to transmit, this new code

even had a few combinations of five left over to use for housekeeping; things like advancing the paper and indicating a space, a comma or a period. Five-bit (a bit is an increment of digital information) code allowed simple electrical on-off relays arranged in a matrix to do the job of translation by causing the typewriter keys to strike the paper with the appropriate letter all by themselves. Here's the chart of the five-group code:

If you examine this chart, you'll see that there are two meanings for each group of dots. Since at the time, we couldn't add another on-off mechanism to the system to expand the code to 64 possible positions, one of the existing signals (one group of five) was used to tell the typewriter to shift to an alternate set of characters. In this way the hardware (the typing machine) was used to expand the software (the five-group code) to get six-bit flexibility. This division of labor between machine = hardware and code = software helped to control system cost. (We use it extensively in MIDI, but in an even trickier fashion: the shift function is applied to the code itself to make the same on-off code groups do double and triple duty, and doesn't use hardware at all).

What were the benefits of the Teletype? Two things:

1. Unattended reception

A machine never sleeps, and doesn't go home at five o'clock. The Teletype could be left on 24 hours a day, and you could read the text whenever you got the time.

2. Speed

Since a machine was translating, you could transmit the code as fast as the receiver could "listen." The first Teletype could be operated about twice as fast as the fastest Morse code expert could key. Of course, you could go slower if you wanted to, but the charges for the use of the first transatlantic line were a lot more than SPRINT, or MCI (New York to London in 1870 was $25 a word!). When a typist lacked skill, or was in doubt about

A Space Bar

B letters ——— figures

Baudot-Code teleprinter.
A. The five-level, three-row keyboard.
B. The layout of the printing typebox
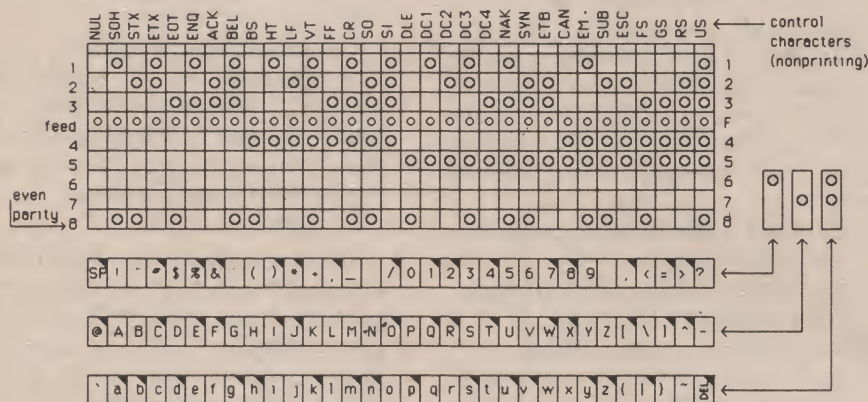
control characters (nonprinting)

feed

even parity

American Standard Code for Information Interchange

what to say, the transmission system was not to blame for the delay, but the expert operators began to complain that the speed of transmission was limited by the typing mechanism.

To overcome the "jam" problem, observe the mechanical speed limit, and save money on "connect" time, a paper tape puncher-reader was added to the typing mechanism. Before you made your "call," you typed out what you wanted to say, and this additional device mounted on the side of the Teletype would punch five-group holes in a two-inch wide roll. If you made a mistake, you could correct the paper tape by covering the "bad" holes so the errors wouldn't transmit. Elaborate edits could be made by splicing whole sections in or out until you were satisfied. After the message was prepared, the operator would thread the paper back into the five-pin reader and transmit at very high rates of speed. At first, setting a mutually acceptable transmission "speed limit" to avoid a jam in the mechanism was handled by defining speed as "on-offs per second."

Later the telegraph/Teletype industry decided to honor the five-bit code inventor Emile Baudot by using the term Baud rate to indicate on-offs per second. We still use this buzzword today when we have to describe transmission speed in an on-off code system.

MIDI Applications

In MIDI, the transmission speed or Baud rate is approximately 31,250 bits per second. Since the term Baud rate means "pulses or bits transmitted per second," no matter what digital form of code is used, it doesn't tell you how many units form a significant group. To get the character transfer speed, you will have to divide the Baud rate by the code group size that your system uses. With a five-bit code word, 300 Baud means that you can only transmit 60 characters per second.

Roland

Does MIDI use five group code? Nope, sorry, but way before MIDI, there were good reasons for adding more on-offs. The only reason the system started with less was the simple fact that we couldn't do any better. Since the available technology is now much more than five mechanical relays, we can afford to increase the number of possible unique combinations to cover all the things that we want to transmit. For example, we aren't forced to solve the problem of lowercase letters by using one unit of precious code to invoke a "local" mechanical solution, such as the shift key on the later versions of the Teletype. We can now have the option, either a shift key, or more code or both, and the code that we now use in everyday computer transmission of text has been expanded to seven on-offs or bits.

This code is called A.S.C.I.I. and the initials stand for "American Standard Code (for) Information Interchange." (See table page 13.)

As you can see from this table of characters, seven switches can stand for quite a large number of different things, we're using this seven bit system to point out another modern concept.

The Open Ended Code System

Not every typewriter has all of the characters listed on the A.S.C.I.I. and even today not every home computer has a character generator that can display the full set. Never mind, the standard does define a lot more that just uppercase and lowercase letters. If you need them, the extras are all listed. Also, expanding the function of your computer won't force a complete redesign of the code.

With the Teletype, each expansion did force a redesign of the entire system, both hardware and code (software). This happened so many times that we finally learned this most expensive lesson: *PLAN AHEAD!* When you design a system, always leave some room for expansion. If you don't, to add a new feature, you'll have to replace everything, retrain everyone, and that won't be cheap. In MIDI, the fact that the code is very extensive is good insurance for the future. There is a code for transmitting everything from notes to whole patch/programs, and everything is ready. But even when two units are said to be "MIDI compatible" there is no guarantee that the new unit you are considering or the one that you already own will transmit or receive all the possible MIDI codes!

MIDI is not magic. If your synth has no pitch-bend level or wheel, how can you generate a code for its position? Conversely, when such a message is received, and no outside bender is present on your second synth, it won't have any circuit to accept a command. To make this dependence and interaction of code and mechanism clear, we could also use our historical examples, the telegraph and the Teletype. For the telegraph, it might go like this!

No Buzzer, no message. Simple, elegant and blunt, this one helps explain why you can't get 7 note chords out of a 6 voice second unit. No buzzer, no note. MIDI transmits, but when there is no hardware left over to receive, there won't be any sound. Sorry, nobody home! With some MIDI devices, when part of the code works and part doesn't, the Teletype provides a useful example:

No shift key, no lowercase letters. No split keyboard switch on the second synth, no split sounds. Same with patch/program switches and many other things. Does the second synth have programs in "banks" as the Jupiter does? No? What does it have? To be certain about the effect of any patch/program code sent by the first unit to the second, you will have to look up the result on an information sheet for the second synth and see what code it "understands." If they are the same, you are in business. If not, too bad. MIDI can only transmit a code message to a second unit, when that message arrives, it can't create hardware that doesn't exist.

MIDI doesn't do everything. That's why the MIDI system also includes F.S.K. and S.M.P.T.E. codes. By now, we've gone over enough of the technology and buzzwords for you to understand why MIDI can't be recorded by a regular audio tape recorder: the Baud rate is too high! 31,250 bits per second is roughly the same as 31,250 cycles per second, and that's too high to hear, unless you're a bat. No professional audio recorder (not even the digital ones) can handle a frequency that high. To get our sequencers and rhythm machines to "sync" MIDI to audio tape tracks, we had to get help from the telephone company.

Frequency Shift Keying (F.S.K.) and MIDI

Since the on-board computer in our free-standing sequencers and rhythm machines can read and remember MIDI, even at 31,250 Baud, but a tape recorder can't, we added a piece of inexpensive electronics we borrowed from your touch-tone phone, gave it a separate cable to run on and ran it in parallel with the MIDI code stream. Here's how it works: when you dial a number on the telephone, a Frequency Shift Keyer (that's the part we swiped) makes the beeps. This F.S.K. chip is actually a midget synth. When you press the numbers, each touch-tone digit tells the F.S.K. chip to make two pitches at the same time. They are definitely audible, so we can record them easily. On Roland MIDI units we used one of the "voices" in the F.S.K. chip to make two different "notes" (1,200 Hz and 2,400 Hz). When a Roland system sequencer starts, the Frequency Shift Keyer changes from one note to the other 24 times per quarter note, sort of like the eee-aah sound of an emergency ambulance, but at the tempo you set on the unit. Record this tone from its separate jack: when you rewind and play this tape signal back into the sequencer or drum machine, the computer in the unit can count the changes in

frequency, and thus keep time. When MIDI codes are "in memory," the computer will know how fast to bring them out and send them to the rest of the units in the system.

There is only one catch. With only a single change in frequency to use as a language, F.S.K. has no way to indicate bar numbers. We can't start in the middle of a sequence because our computer won't know, for example, which quarter note to send. With F.S.K., we'll always have to start at the beginning of a piece. If we want to keep track of more than just the timing, we're going to need more code words.

If you don't need that start in the middle, you don't have to deal with S.M.P.T.E. code—F.S.K. will work just fine. S.M.P.T.E. stands for the Society of Motion Picture and Television Engineers and they have a sync code all their own. S.M.P.T.E. works as an add on to the MIDI system not a basic. Roland's SBX-80 allows MIDI and S.M.P.T.E. to work together to perform "punch-ins" and elaborate editing of visual and audio for film or television work. If you are working in a 24-track recording studio or on a film score, time is not just money, it's megabucks. Starting from the top every time you want to add a part to a "unit" on a movie (that's one eleven minute reel) is going to cost a fortune. Yes, our SBX-80 could be considered a luxury, but among those who need it, it's going to make lots of friends. The SBX-80 will read and write S.M.P.T.E. code, output FSK (all sorts—not just ours), and, of course, MIDI. If the studio and film people are the ones who need this, it seemed sensible to use the code they invented.

The S.M.P.T.E. Time Code

What is it? Well, first we better go over the why. When you are dealing with film, you can look at the picture to see which piece you are holding. The sprockets will keep you in sync as long as the sound starts at

the beginning, as will F.S.K. When a reel of film is ready for the mix of the sound track, we can depend on sprockets to keep everything together, and a sound that comes in the middle can be padded out with blank stock (the oldest way) or started on cue by some other method (everything from an expensive union technician to full S.M.P.T.E. code automation). That's fine for film, but looking for a single picture on a hunk of videotape isn't so easy —and there aren't any sprockets on video tape at all. In the mid sixties everybody in the TV editing business was going nuts, so the society got together a committee to work up a code. The code was to have only one job: to keep time. There are separate sections in an 80-bit group of on-offs for the hour (24 max), the minute (59 max), the second (again, 59) and the things that are important to film and TV, such as the frame (each picture) and in the TV something called the "field" (half a picture). At the end of each code group, there are several bits used for the job of indicating whether the tape is running forward or backward, and there are bits scattered between the time indicators that can be used for special jobs like labeling what reel it is and other things that are nonstandard. If you multiply the 80 bits by the number of pictures you will have the number of bits per second that S.M.P.T.E. code uses.

In the beginning, American black-and-white TV used 30 pictures per second, so the frequency was an easily recordable 2,400 Hz. In Europe, the TV picture rate is 25 per second, so the code runs a little slower, at 2,000 Hz (25X80 bits = 2,000). Movies use 24 frames per second. American color TV is a bizarre 29.97 frames per second, and uses a modification of the code called drop frame that requires a computer to discard frames every so often to stay in sync. No matter which version of the code is in use, they all use the same 80-bit words and they are all recordable on standard audio tape recorders, and the

audio edge-tracks of all video formats.

"80 bits! That must take an expensive computer to read it!" Well, no. Since the code is broken up into specific groups (hour, minute, second and so on) and the transmission speed is an easy 2,000 to 2,400 bits per second. S.M.P.T.E. code doesn't need much computer power to accomplish its synchronizing and search functions. Also, remember that all it does is count, and that means that each code word is a simple "one more" than the last. The basic job of reading S.M.P.T.E. code isn't too hard.

"If the job is so simple, why do the controllers in studios I've been in cost so much? $8,000, $16,000— I was told that something called an E.D.L. system cost $50,000 and the computer was so big, it was in a room down the hall!" What you are describing is the difference between a wristwatch, and a time machine! Reading S.M.P.T.E. from one recorder is easy. Doing something about a timing error requires a lot more hardware, and a lot more computer. An Edit Decision List system can read the time from several machines, compare the results, detect the fact that one (or more) of the players is at the wrong time and then send signals to tell the slowpoke to catch up. This costs! Edit Decision List systems include things like read-outs, so you can see which machine is slow or at the wrong time, and built-in programs that can tell all machines in the system to "go to time X and park." With a really deluxe system, you can say "do all the edits you have in memory, while we watch the picture and listen to the sound." That's called auto-assembly and it's worth a lot to a game show producer, or an editor working on a three-camera-plus-sound siticom TV show.

"I don't need all that to run a MIDI-plus-tape system." We didn't think so either. The SBX-80 will tie into such a system, but its job is to start MIDI gear in the middle of a piece by reading time code correctly,

Jazz Chorus: Anatomy of a Classic

In any endeavor, even artistic or scientific endeavors, the commonplace and the mediocre exist beside the original and the classic. This also includes the arena of amplifier design, where a few participants impart on their work the distinguished stamp of classic—that seemingly elusive combination of originality, popularity, and longevity. The Roland Jazz Chorus series amplifiers, particularly the JC-120, have earned the designation of classic.

Introduced in 1977, the JC-120 was the first in a series of amplifiers that has continued to evolve in response to the demands of the musicians that have used it. The new Jazz Chorus amps, the JC-77 and JC-120H, are proof of this continued improvement. **Adrian Belew, Robert Fripp, Andy Summers, Steve Kahn, Al Di Meola, Tommy Tedesco, Lee Ritenour, Bob Seger, Jeff Baxter, Elliott Easton,** and **Ric Ocasek;** these musicians, though their styles vary, share the fact that a Roland JC amp is one of their music making tools.

At Roland, we know the musicians listed above are probably nice guys. We're sure they write their mothers regularly and don't kick their dogs. But frankly, when it comes to amplifiers, these guys are TOUGH. They demand outstanding performance, unique features, and day-to-day dependability.

The JC's performance begins with its sound. It was designed to deliver the kind of audio performance normally associated with high fidelity amps. Right from the input

JC-120H

the JC delivers more "headroom" than other instrument amps. This headroom lets the JC handle signals from single and dual coil guitar pickups as well as the much hotter signals from synthesizers and other keyboards. Roland engineers spent a great deal of time investigating the properties of the guitar's magnetic pickups, and how they affected preamp, equalization and power amps. These studies led to the development of integrated circuits (ICs) that allow the true character of the vibrating string to pass through the system without alteration of harmonic content or color. To date, the JC amps have the widest bandwidth and cleanest sound around.

Why ICs, when all the amp classics up until the JC had been "tube" amps? During the development stages of the JC, Roland engineers realized that the era of the vacuum tube amp would soon be drawing to a close. Not that tube amps were considered outdated in sound quality, but because so few component manufacturers were making tubes of any quantity or quality. Most of these companies could no longer invest their time, manpower or money to make vacuum tubes when their main accounts, television and stereo makers, were switching to "solid state" components. This realistic appraisal has proven out as most amp models available today are either solid state or very expensive versions of early tube amps.

Roland set out early on to make the first classic of the integrated circuit era. After input headroom is supplied, other elements of the pre-amp design must be considered. The special passive equalization controls, echoing the concern for headroom, are designed to allow subtle and effective changes to be made in the High, Mid, and Low frequencies without losing the original harmonic quality of the vibrating string. The new JC-77 and JC-120H have a further refinement. They use a four band equalizer section that adds a Hi-Treble control.

One of the most popular features of the tube amp classics results from an imperfection in their original designs. Tube pre-amps produce a unique form of distortion, particularly when combined with tube power amps. When pre-amps are overdriven, they will tend to overdrive power amps. The product of

Jazz Chorus: Anatomy of a Classic

all this distorting and overdriving is the screaming guitar solos of the sixties and seventies complete with that other beast-or-burdens, feedback.

Again opting for originality, Roland engineers created a new kind of distortion circuit. The original JCs had a distortion system that began to change the waveform of the input signal into the shape of a square wave. As the intensity of the effect was increased the original waveform begins to look more and more like the perfect square wave. This system is called Variable Feedback Distortion and produces a much more mellow effect than the difficult to control tube amp distortion. This circuit has also been refined through the years. The distortion circuit of the JC-77, JC-120H, and JC-120 amps made after November 1984 have greater intensity in their square wave effect and deliver a higher level of gain. This new circuit produces an effect similar to the popular BOSS Heavy Metal Pedal.

A distortion circuit that delivers, flexible equalization, and audiophile input specs; the engineers were on a roll. What's next? Stereo Chorus. In 1977, the chorus effect was a relatively new idea and the stereo chorus was only available as a BOSS effect costing about $200. The engineers put the stereo chorus into the first JC amp, thus the name Jazz Chorus. To make the effect truely stereo and truely spectacular you would have to use two speaker cabinets and phase the chorus between them. "Wait a minute!" Someone said. "Let's put the chorus in the pre-amp and use two separate power amps, pulsing the signal between them." So you have the unique JC amp system: a mono pre-amp, stereo power amp, a speaker for each power amp. The Chorus and Vibrato in the JC amps have a spectacular feeling of motion as the sound pulses from speaker to speaker. JC-77 and JC-120H have further refined the Chorus by adding a Manual Mode that allows the user to adjust Rate and Depth.

We've already mentioned the unique power amp configuration of the orginal JC-120. The JC-120 has two amps each providing 60 watts RMS of power to 12 inch speakers. On the surface the JC-120 is a standard 2 X 12 120 watt guitar amplifier. Beneath that surface it is something special. The new JC-77 and JC-120H have the same basic configuration as the original JC-120. The JC-77 has two 40 watt power amps feeding two ten inch speakers. The JC-120H is a head-only amp that lets the user assign its two 60 watt power amps to speaker combinations of their choice.

"Esoteric designs are fine," said our mother-writers, "But my amp has to perform every day." After eight years on the market, less than one percent of all the JC-120s made have been in the shop for service. ICs are much less prone to damage than vacuum tubes, but the JC amps also have high impact corner and edge protectors. The control panel is recessed to prevent accidental damage to the knobs. The amplifier itself resides in an all steel chassis. Every step necessary to make the JC a tough and dependable performer has been taken. 99% of all the JCs made have never seen the inside of a service center and that means the engineers were successful again.

In the JC-77 and the JC-120H we have two new versions of a classic design that offers outstanding clarity of sound, unique features, and dependability. We're sure the JC-77 and JC-120H will experience tremendous popularity. Afterall, their older brother has been getting ovations from some tough audiences for years.

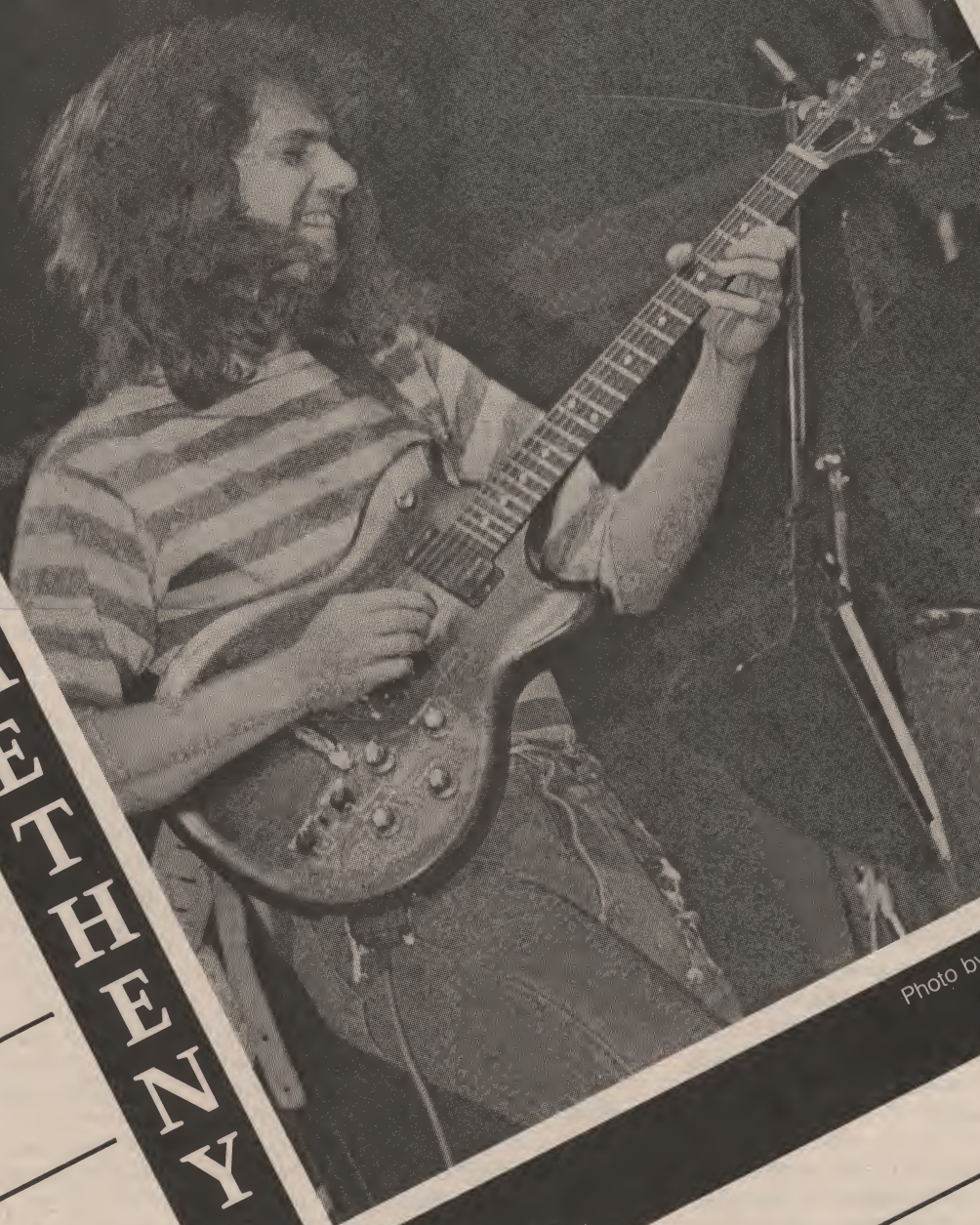
Roland

PAT METHENY

by Jess Ellis Knubis

Photo by Ebet Roberts

The sound seems to swell and cascade, echo and scream. Sounds that transcend the boundaries of the guitar yet seem to epitomize everything that the guitar is capable of.

At 29, Pat Metheny has popularized a new era in jazz guitar, taken the instrument outside of its normal parameters in terms of both musical creativity and the creative use of technology.

The unique style, first developed in the bars of Kansas City, has matured over the years through association with such diverse artists as Joni Mitchell, Paul Bley, Charlie Haden, Sonny Rollins, Hubert Laws, and of course, his ubiquitous partner, Lyle Mays.

And that unique sound, first the product of an inexpensive Gibson arch-top and liberal doses of digital delay, has developed into one of the most highly technical combinations of hardware, software, and experimentation in modern improvised music.

Yet through that synthesis and development, there remains the essential articulation, expression, and love of music that continues to excite audiences with the innovation that first brought him acclaim.

In this conversation, Pat discusses his musical development, coping with international success, and the future of synthesized music.

RUG: What sort of music did you hear in Lee Summit? What was the home environment like?

PM: Well, there was all kinds of music around. Being from that part of country, country and western was real popular. You couldn't go outside and not hear that, so that was part of it. And at the time that I grew up, like most people my age, the rock n roll thing was really starting to hit. When *Hard Days Night* came out I think I saw it 14 or 15 times, I guess I would have been 9 years old. And the town I'm from was sort of famous for its marching band community. And also, I lived close enough to Kansas City with the whole jazz scene that was happening there, although it was distant to me until I was 14 or 15. From the time I was 15 on, I was working 7 nights a week in Kansas City with jazz greats. So I was lucky to have a whole bunch of influences and I was always a big fan of all kinds of music.

RUG: Was your family supportive?

PM: There was conflict — especially in the days when I was still going to high school and working in Kansas City in sleezy joints. But as time went on they became more and more supportive and now they're really fans. But I learned to play on the bandstand in those clubs. I was real fortunate that, at the time I was getting active on the Kansas City

scene, there were no other guitar players to speak of, one or two other guys and that was it. So I got every gig by default and in fact, found myself with the best gigs in town, with the best players. Not that I was that good, but because there were no other players around at a time when the popular sound in a lot of these places was the organ, guitar and drum trio thing, and I did a lot of that stuff.

RUG: So by that time you were already comfortable playing through changes, you had developed your chops...?

PM: Yeah, even from the time I was 15 or 16 I was doing that stuff. The kind of music I was playing around Kansas City, even though I wasn't playing it that well was, you know, pretty complex jazz standards. I mean, I kind of bypassed the whole rock-n-roll thing and went almost immediately into jazz and very avidly, right from the first day practically, I was practicing 10 or 12 hours a day. I was really into it. I was really influenced by Wes Montgomery, Kenny Burrel, Grant Green and Jim Hall. Those were the big four for me, as far as guitar players. Later on I got involved with Jimmy Raney, who was really important to me. And after a certain point, and I think this is true with most people who are looking to be improvisors, I didn't care what instrument it was played on, whether it was guitar

players or not. So the big influences for me, after the initial fascination with the guitar were Miles Davis, Ornette Coleman, Sonny Rollins, Herbie Hancock, McCoy Tyner, Bill Evans, you know, all the cats.

RUG: Was joining the Gary Burton group an important development?

PM: As far as national exposure, yeah. Gary was another big favorite of mine and his group at the time was the only one that was using the guitar in a progressive way. Most jazz groups didn't have a guitar at all until 1968 or so when Gary came along.

RUG: When did you first start using the digital delay?

PM: Well, when they first came out. I had an experience in the studio with one and I couldn't afford it until about 1977 and that's when the cheaper ones started coming out. But I was hooked immediately, they just killed me.

RUG: Your formal music education, then, was limited?

PM: Well, even though I never really went to school or went to see a guy in a music store once a week or anything, I was very definitely a student of music. I studied all the jazz manuals, read all the books; even before I left Kansas City, I could analyze any tune and tell you what the resolutions of the harmonies implied in terms of various chord

scales and that sort of thing. It's just that I never had an official teacher and had there been teachers around, I'm sure I would've had them.

When I was teaching at Berklee as part of the Burton band, I was having to teach certain things that I didn't exactly...well, it was stuff that I knew, but I just had to learn the correct names for and Gary really helped me out on all that stuff.

RUG: Do you recommend a self-taught approach?
PM: In a way, I'm always reluctant to say that I'm self-taught because that implies that you don't really know what you're doing. But I think, if you can do it that way it's better because you're constantly accumulating things and there's never that expectation of what you don't know.

RUG: Is Lyle Mays' background more formal?
PM: No, in fact, our backgrounds are very, very similar. He's also from a very rural town that actually makes the town I'm from look like New York City. He's *really* from the sticks. We could both analyze to the "nth" degree if we had to and I think that we both felt that was important, even though there wasn't somebody around to show that to us.
RUG: Tell me about the work you're into now, the Synclavier and the Roland Guitar Controller.
PM: Well, it's the most incredibly exciting and magical thing that's probably ever happened. How's that for starters? I first got a Synclavier about 3½ years ago now, and that alone was a major thing for me because it brought everything right under my fingers. Even though I didn't really have the keyboard chops, to be able to have a 16 track sequencer that was efficient and mobile as that sequencer, was compositionally, an incredible breakthrough for me. Everything was possible all of a sudden. So immediately after getting it I started calling them up every day and saying, "Look, we gotta get a guitar interface for this." And over a period of three years and two or three prototypes, a lot of back and forth trips up there, we came up with the idea of using the Roland as the triggering system. Because they were talking about making another guitar with

the hex pickup and I mean, really, all I needed was another guitar to get the feel of. And I think the Roland is an excellent guitar, the brown one, the G-303. And so I took that up there (to New England Digital). And they started doing some tests and they said, "Everything we need is right here, let's just use that." And I said "YEAH!". So they started working on it and now any Roland guitar can plug into the interface. I mean, you don't do anything to the guitar, immediately you're into the Synclavier world.
RUG: The Synclavier is kind of an expensive machine....
PM: Yeah.

RUG: Like, $60,000....?
PM: Yeah, well it varies depending on how many voices and options, that kind of thing. But to be accurate, I think that if a guitar player wanted to get in on it and wanted to start with an eight voice system, you could get started for less than $20,000.

RUG: Not cheap by most people's standards.
PM: No, but still, on the other hand, I honestly feel that most people have no idea what we're talking about here. This is a breakthrough that makes the electric guitar look like nothing. It allows guitar players to, first of all, sound like any instrument, to record into a sequencer directly, to play anything, have it printed out in music...not only that, but to have a certain

feeling as a musician that allows you to get away from the sort of inhibitions that guitar players traditionally have had to deal with. In other words, you can play notes and take your finger off the strings and the note will still ring...stuff like that, that keyboard players have been able to do for a long time now. I mean...I just can't say enough about it. It's the kind of thing where, literally, I get up in the morning, when I'm not on the road, and I sit in there for twenty hours and then go to sleep and then do it again. And you can do that every day, it's wild. Plus, with the Roland AB switcher box (US-2), if you already have a Roland synthesizer, you can plug the guitar into the guitar input and have channel A be the Roland and channel B be the Synclavier and play them both together at the same time.
RUG: The two seem to be completely different instruments.
PM: Oh, definitely. From what I understand, the Synclavier works from pitch to voltage where the Roland uses what they call time to voltage. The Synclavier uses an extremely high-powered computer to read the string like, 50,000 times per second. I mean, you can see on the computer exactly what you're playing as you're playing it.

RUG: You mean as far as pitch and waveform...?
PM: Pitch, what string you played on, how hard you played it, that kind of stuff. The Roland is ob-

viously geared to a much lower price, but to tell you the truth, I mean...I'm not going to throw away my Roland. There are things that it does that my Synclavier *can't* do, like for instance, sound like a guitar, in the sense that to me, the Roland GR-300 is like a super hot rod guitar, it feels like a guitar, it responds like a guitar, all that stuff, which the Synclavier can do, but the Roland has a certain quality to it. I mean, I don't know much about the circuitry, but it seems to me that it's following the analog part of the sound as opposed to measuring the string, and that's a real advantage for that screaming guitar stuff.
(Editor's note: At the time of this interview, Metheny had just received his GR-700 module. He has been using it in Europe and was not available for an interview update.)

RUG: Sort of the ultimate effects device.
PM: Yeah, except I've been constantly surprised over the years by how much further up the ultimate can get. But to have the Roland and the Synclavier from one guitar is a sound that, until you've experienced it, you can't believe.

I think Roland should take it as a real compliment, 'cause what this means is that the Roland guitar is going to be the standard. I'm sure that there will be other manufacturers that come out with systems that use that 24 pin connector as the standard language from guitar language. Because, I mean, they've done it, they've come up with a really hip pick-up and a very logical way of accessing it with that kind of cable. Ultimately, I think that the Roland guitar controllers and the whole pick-up system may become, you know, kind of what the magnetic pick-up is now, the industry standard.

RUG: Speaking of guitar language, what experiences have you had with the MIDI system?
PM: Well, none so far. In fact, I'm highly skeptical of it, to tell you the truth.

RUG: Why is that?
PM: I know that it moves at a very slow rate, relative to the kind of stuff that we're talking about in the Synclavier. They're talking about one bit every 5 msecs and um, I can

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imagine, for instance, someone triggering a Synclavier from some other source just to get the Synclavier sounds, but the Synclavier is spitting out like, well, it's a 16 bit machine so like, every 5 msecs there's like hundreds of bits passing, let alone one bit every msec.

RUG: You don't think it will be fast enough to track all the information from a guitar?
PM: I don't think so, no. I'll be curious to see. Doesn't the 700 have it? *(Editor's note: MIDI transmits 1040 30 bit "words" per second. See the Understanding Technology article in this issue for the answers to Metheny's questions.)*

RUG: Yes the 700 does, and the idea behind it, of course, is that any MIDI instrument will be able to interface with any other digital equipment available, including other computers.
PM: I hope it works. It's hard for me to imagine how it could work and also get the dynamics. I could see how you could turn notes on and off, but when you bend a note or when you play with dynamics, you increase the amount of information that needs to be read by about ten times.

RUG: Beyond the Synclavier, what instruments are you using?
PM: Well, I'm using the Roland GR 300, which I love, and in fact, I'm amazed that more people aren't playing it. It's been like four years now, and I figured...when I went into a music store and played that, I said, "Man, I want to make a record quick, because everybody is gonna play this constantly on every record made from now on." And at this point, there are only three or four people who are really using it.

RUG: Who do you suppose that is?
PM: I don't know. I think that there's a kind of fear in guitar players. That's the only thing that I can figure out, that it's a fear of the unknown or something. I don't know if it's that or if it's intimidating or maybe they just like the sound of the guitar, they don't want to mess with it.

RUG: Could the boundaries between guitars and keyboards become less defined?

PM: I think that could be part of it, but I'll tell you what I think it is as much as anything, a lot of people still don't know what it means. I still have people come up to me, guitar players, after concerts, after I've played a screaming solo on the Roland, and they'll say, "God, how do you make your guitar sound like that?" and, I mean, it's up an octave, it doesn't sound anything like a guitar, it couldn't be anything but a guitar synthesizer, but because you're a guitar player standing there playing a guitar, they still perceive it as a guitar. So I think a lot of it is just lack of exposure.

RUG: Education?
PM: Yeah, maybe. And in fact the people that are using the Roland, most of them aren't really using it for what it can do. The only guy I've heard who really is exploring it is Adrian Belew and he's *really* dealing on it. I saw him play live and it was like, "yeah", he was tearin' it up. A lot of guys just turn it on and then open the filter and then close it and that's kind of it. But to me, the fact that it allows you to get to those other registers...obviously, you can tell from my records that I prefer getting the guitar up an octave, which I use the Roland for a lot. You get out of the tenor range and into the alto range, which is great.

RUG: So, is the guitar synthesizer the future?
PM: Ahh...not exactly. I think the future is always going to be good music and good tunes. And after messing around and spending, I don't know how many tens of thousands of dollars on all this junk, I still find that if I write a good tune, it doesn't matter if I play it on the Synclavier, the Roland or a kazoo, if it's a good tune, it's gonna sound good on any of those instruments. So I think that the future is still in the hands of the composers and musicians who come up with the goods. But I do think that as far as stimulating the imagination, these instruments are incredible breakthroughs. There's music that I never would have played if I had not had the Roland, and that's pretty exciting right there, that an instrument can inspire you.

RUG: How is a small town boy, not

yet 30, affected by international success?

PM: Well, it's not really different. I mean, the only time that there was a real change for me around the time that the white Pat Metheny Group album came out, which is my third record and the first group album. Prior to that time, my idea of success was to be able to play a club with Gary Burton and have it half full on week nights and sold out on weekends. To me, that was about as big as it got in jazz, and when I made the decision to start my own group, I had been playing with Gary about three years and it was getting to be time to move on and think about doing something else. I had met Lyle and we had hit it off and we had fun playing together, so I said, ''Well, let's try this,'' and we got some gigs. I had already won a couple of small polls in Downbeat magazine, you know, the ''Talent Deserving Wider Recognition,'' I had a little bit of a reputation and I had those two records out, *Watercolors* and *Bright Size Life.* And we started the group and went out on the road and then that group album came out and all of a sudden, instead of selling 10,000 copies, it sold over 100,000 copies very quickly and that was a shock to me. And for a period of a year and a half or two years after that, I was kind of confused and you can hear it in *American Garage* and *New Chataqua.* Not so much, *New Chataqua,* that was made even before the group record came out, but especially *American Garage.* Of all the records, it's my least favorite and to me the weakest one, because at the time, I figured I was a jazz guy and here we were selling all those records and having all these people come and I didn't know exactly why. And after a short amount of time, about a year of not exactly knowing what was going on, I just figured out, that all I really wanted to do and all that I had done up to that point was play the stuff that I liked. And when I resolved that question, everything became very easy. I was never interested in being in show business or being a celebrity or selling lots of records. All I ever wanted to do was be a musician and try to play the music that I like the best that I could play it. And that's all I do now. I use that as my saying, each day when I get up, I just want to play some stuff that I like and, I hope other people will like it too. But if they don't, that's OK. And I'm finding that my tastes as a listener are actually similar to a lot of other people's tastes. And on one level, I love hearing real simple pop music but on another level, I can listen to Ornette Coleman records all day long. And I hope I'll play music that conveys the love that I feel for all different kinds of music and, hopefully, it will always sound like *me,* too. So, as soon as I resolved that, everything was cool and there's nothing really to be changed, except that the only real change is that I can play a lot better now than a long time ago — and for some people that results in overconfidence. But I know that I play a lot better now than I did five years ago but I also know that five years from now, I'm going to play a lot better than I do now. And if you keep both those things in mind, it keeps you humble, in a way. Because you can see that it's a very transient experience, it's something you can't hang on to. If you say, ''Gee, I'm really good and I play my ass off,'' the moment you start doing that is the moment you won't get any better, and I've never given in to that feeling. I always assume I should have done better. You can go too far with that, too, but so far it's worked for me in keeping everything in perspective.

RUG: I guess that's why those albums just keep getting better and better.

PM: Wait'll you hear the next one! Actually, there's two in the can right now. There's one that will be out this summer, I'm real proud of. It's different than the group thing, it's

Photo by Anne Fishbein/Photo Reserve

The Cars

ROLAND
On Tour

by Ray Baragary

It was the end of summer and, for many, the last chance to prance before fall came, packed with its responsibilities. So, there was a back-to-school party waiting when the CARS pulled into the Los Angeles Forum on their *Heartbeat City* tour. Although it wasn't an R.S.V.P. affair, I was happy to respond to an invitation to see the band for the first time and meet the group's keyboardist, Greg Hawkes.

I was also curious, wondering what my own reaction to the CARS "au naturel" would be; there seems to be so many different opinions written and voiced about the band. I wanted to get a glimpse of the famous CARS mystique, because it seems that the group's personna, or mystique, creates most of the controversy. The arguments are suspended between words like: cold vs precise; unemotional vs intellectual; hard-edged vs stylistic; pretentious vs sense of humour; uncaring vs pragmatic; remote vs objective; sterile vs well-defined; sparse vs understated.

Whatever your personal opinion, you must agree the CARS are successful; they sell records and sell out auditoriums. Even a casual observer can see that the group approaches their songs with seriousness and dedication.

While the visual element of the concert was set for cruise control, with heavy emphasis on the control, the music was superb. It's a shame, in a way, that the group's great videos raise a concert goer's visual expectations so high that anything less than a flaming Michael Jackson is a disappointment. The group members do appear uncomfortable on stage, but five musicians generate the kind of layered sounds usually found only in recording studios.

The CARS are one of the few bands whose live sound doesn't suffer by comparison to their recorded sound. Many of the songs, particularly the older numbers, benefited from more punch in the rhythm section and from Hawkes' sophisticated keyboard arrangements.

The CARS success can, perhaps, be attributed to mastery of two fundamental skills: songwriting, and the creative use of the latest in music's electronic technology. Not coincidentally, the CARS are Roland users. While Roland didn't contribute any songs to *Heartbreak City,* Roland equipment is a big part of the group's sound, both in the studio and on stage.

On stage, Greg Hawkes uses two Jupiter-8s, four MSQ-700s, one MC-4B, three MD-8s, and a SDE-2000. Ric Ocasek uses a pedal board full of BOSS effects and a Roland VP-330 Vodcoder. Elliot Easton plays a GR-700 Guitar Synthesizer using a Paul Hamer guitar with Roland electronics. Easton also has a pedal board that features BOSS effects.

After the show I got a chance to talk to Greg Hawkes about his music, his equipment, and his role in the CARS.

RUG: What was your music background?
GH: I had piano lessons that started in the second or third grade.

RUG: Did you have one of those teachers that rapped you on the knuckles with a ruler?
GH: No, I took to it pretty well, but I wasn't really that interested. I didn't enjoy it that much. I started playing the clarinet in the school band when I was in the fifth grade. I really got interested in music when I was thirteen or fourteen. I went out and bought a guitar. I played guitar in bands through high school. During high school, I started wandering back to keyboards. I also got sidetracked into saxophone.

RUG: Are you a jazzer?
GH: Not really, I used to listen to John Coltrane and Pharoh Sanders records. So, I guess I was, marginally, for a while.

RUG: Have you played sax parts on your records?
GH: I played a few things on CARS records; "All Mixed Up" and then a couple of section things on "Don't Tell Me No," "Give Me Some Slack," and "Maybe Baby." Most of the other sax things I've done are pretty well buried in the mix.

RUG: What's your role in the band?
GH: I try to get something different happening on a section by section basis. Creating new textures and sounds, particularly when the arrangements are first being put together.

RUG: The band's use of space and sound is reminiscent of the early Beatles.
GH: Well, the Beatles were a big influence. They were the single biggest influence on me, personally. They were the group that made me want to play in bands; to really get involved in my music.

RUG: When you arrange your parts, are you conscious of the "mid-range bulge" created by the two guitars in the band?
GH: Not consciously, some songs do lend themselves to the guitar sound; even when you first hear them. But, even on something like, "You Might Think," which is a guitar oriented song, with the guitar clicky eighth notes, there are a lot of keyboards there, weaving in and out.

RUG: Do you feel unappreciated?
GH: No, it's funny, but people usually comment, at least from the second album on, they've said, "Boy, there's a lot of keyboards on that." Particularly from *Panorama* on, they've said, "Boy that's all keyboards." There definitely are more keyboard textures on the newer records.

RUG: You use so many sequencers and automated parts in the live show. I noticed that you were voicing the chords with your hands in the air. Is that an attempt to show the audience that some things they're hearing are not being "played" at that time?
GH: I did that in "Heartbreak City." I guess, it's sort of an in-joke. I figure, "Why pretend that I'm actually playing all the parts all the time?" Why not do something that makes the audience think, "What's he doing?"

RUG: Do you think most people know what's going on?
GH: I doubt it. I don't think most people know what sequencers and so on, are all about. I might be wrong, but I think they assume that what they see is what they hear. It's hard to say how many people pick

up on it. But during a set, I may have as many as five synthesizers/sequencers preprogrammed and all MIDIed together. I've got four MSQ-700s, a MC-4....My stage setup is like double-vision, there's two of almost everything. Two Synclaviers, which primarily do sampled sounds and sound effects; the second unit acts only as a backup to the first. I've got two Jupiter-8s, two Yamaha DXs, and two Memory Moogs.

RUG: What is it you like so much about sequencers and drum machines?

GH: I've always liked real exact rhythms, sequencer sounding rhythms. Something about that perfect time....For me, I can turn on the drum machine and it's like "instant groove." Some people don't hear it like that, but I love it when everything is in as perfect sync as possible, playing together. There is only one limitation, if you want to see it as that, when playing with all the sequencers and drum machines, you're locked into a tempo. Maybe there's a way around that, I don't know. (Editor's note: the SBX-80 Sync Box can solve this problem using its manual tap buttons or external audio input)

RUG: Where do you see the instruments, the creative tools, going?

GH: Well the MIDI and modular stuff are already here, so I guess the new "genre" in keyboard technology would be the sampling systems. I think there will be a lot of new timbres created by these instruments; sounds that people have never heard before. You can already hear things in records that are being produced today. Things that might sound like a skip edit were probably done on a sampling synthesizer. I'm also looking forward to hooking my gear up to a computer. The ability to store on floppy disk or cartridge would be great. For example, I'm using four MSQ-700s; each unit has three or four songs on it, then I just switch to the next one. One new trend that I'm not crazy about is the new touch-sensitive keyboards. I've never been an especially big fan of touch-sensitive keyboards. There's something I like about the plastic keys of the non-sensitive keyboards. Many of the keyboards are just way too heavy.

RUG: How would you feel about a plastic key mother keyboard that still had touch-sensitivity?

GH: That would be interesting. I'd have to try it out. But linking things up with the MIDI is something we've been doing for a while. We did a lot of that on *Heartbeat City*. I'd have four or five instruments running the same parts. That's how we got some

of the more orchestral sounds and textures. They were built up. I love being in the studio, experimenting with the textures. That's really where I'm happiest.

RUG: I hear there is another solo album in the works.

GH: At some point. I have started work on some things, but won't get a chance to work on it again until October.

RUG: Will it be in the same vein as your last record?

GH: Yeah, but I hope it's better, expanded; more textures going on than last time. I'm hoping my next record will be more composed, pre-thought out. I want more sounds. I hear a lot of water sounds, sounds in nature, and vocal sounds. Not vocal sounds in the sense of "singing," but just using the pure voice as a "sampled" source.

RUG: One last thing: People seem to use things that would normally be considered compliments to criticize the band. Things like: intellectual and calculated. How would you respond to these "accusations?"

GH: All I can really say is that I'd rather be in a smart band than a stupid one.

Roland

Photo by Ebet Roberts

Stage set up of Greg Hawkes

Sync Box Pulls It All Together

Pull it all together with the SBX-80 Sync Box from Roland. In a world where landmark technical developments seem to appear with the speed and regularity of the morning sun, the individual technologies of musical instruments, film, video, and audio have evolved independently at an amazing pace. Over the last few years these independent mediums have been asked to work together in exciting ways, but elaborate devices were often required to make these combinations perform. The SBX-80 Sync Box provides a single, easy to use, answer to these applications problems.

The SBX-80 is a multi-timebase, SMPTE (Society of Motion Picture and Television Engineers), and MIDI (Musical Instrument Digital Interface) compatible clocking device. As a master controller, the Sync Box can read a variety of signals including audio clock track and live performance cues, while simultaneously sending synchronizing information to many other devices that use different time codes.

SMPTE functions as the common denominator for all of the other timing codes that the Sync Box reads and generates. SMPTE operates using the universal time concepts of hours, minutes, and seconds, and then further divides seconds into frames and bits. Using this system, each medium (audio, film, etc.) can be inscribed with a code that not only allows other mediums to perform in synchronization, but the code also enables the user to search, retrieve, insert, and delete individual sections.

The SBX-80 can accept input from SMPTE, MIDI, Audio Click, and its manual Tap buttons. Tap buttons allow the user to establish or change tempo in real time by "tapping" the buttons to set quarter note values. A numeric value can be assigned to quarter notes or eighth notes using the unit's ten-key pad.

SBX-80 Sync Box

The Sync Box then sends through its outputs MIDI, Sync-24 (Roland's sync code), a programmable Time Base (1, 2, 3, 4, 24, 48, 63, 96, or 120 pulses per quarter note), SMPTE, and a Metronome signal.

The Sync Box is the ideal tool to coordinate multi-media systems like the following: automated music systems (sequencers, synthesizers, and rhythm machines) and film or video; automated music systems and live performance; audio tracks that lack any kind of "sync code" and new automated music; automated music and "free time" music performances; and any assortment of electronic instruments that might work on different timing codes.

Selling for only $1195, the SBX-80 Sync Box from Roland is a low cost way to solve those sync problems that can sabotage an entire project.

Axis Remote MIDI Keyboard Controller

Freedom, stage mobility, and all the controls for a complete MIDI system are yours when you strap on the Axis from Roland. The Axis is a 44 key, velocity and after-touch sensing keyboard that is designed to
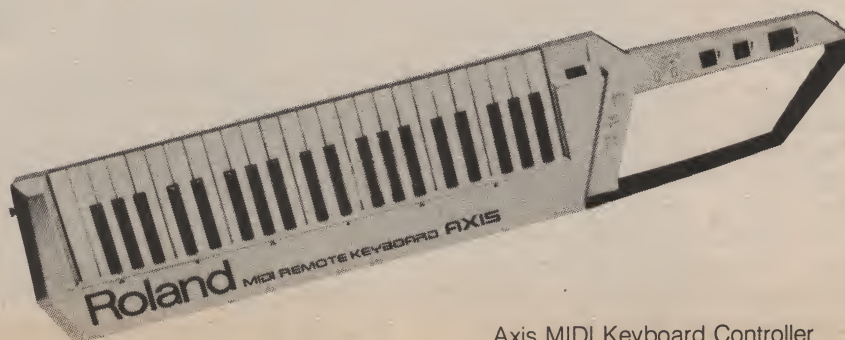
Axis MIDI Keyboard Controller

be worn on a strap over the shoulder like a guitar.

120 programs, five banks of 24, can be controlled from the Axis. A series of ten programs can be "stepped" in sequence by using a simple switch on the console of the Axis.

A revolutionary set of assignable switches on the Axis are called the Write Mode Set. These switches come preset from the factory to control Modulation, Portamento, Modulation Volume, and Amplitude Volume, but can be reassigned to any synthesizer function. Other features on the front panel of the Axis include Bender, Octave Down, MIDI Channel Assignment, Key Transpose, and an LED Display.

The Axis is available in stage-bright red or silver and is priced at an amazingly low $695.

MSQ-100: A Giant in a Mini MIDI Package

The MSQ-100 is a low-priced compact MIDI sequencer with some of the most elegant and sophisticated editing features to be found anywhere. It is capable of handling all MIDI data including velocity, pitch-bend, channel assignment, etc.

Total memory capacity is 6100 notes, which can be maximized by using a set of mini switches that filter out certain MIDI data (velocity as an example) that will not be used. Writing may be done in either Real Time or Step Mode, or a combination of the two. Overdubbing may only be done in Real Time mode, but may be done repeatedly until all memory has been used.

The MSQ-100 has the ability to reassign channel information, which is particularly useful if loading is being done from an early production model MIDI instrument that only transmits on one channel. Reassignment is not possible on overdubs, but the MSQ-100 will remember different MIDI channel assignments on overdubs if the transmitting instrument sends that channel information.

Measures of MIDI music may be copies, erased, inserted, or deleted by the MSQ-100's elegant editing system. Completed data programs can be stored on audio tape. Priced at only $695, the MSQ-100 is a cost

effective foundation for any MIDI system.

A New Spirit In Amplifiers: S-40A

The Spirit 40A brings a completely fresh design to the Spirit line of affordable amplifiers. A twelve inch speaker, 40 watts of power, a newly designed footswitchable overdrive circuit, reverb (also footswitchable), and pre-amp out/main in circuits highlight the S-40S's long list of features. The amp also has three band equalization, a presence control, and a headphone jack that makes this amp as easy on parent's ears as it is their pocketbook. The Spirit-40A is priced at $295.

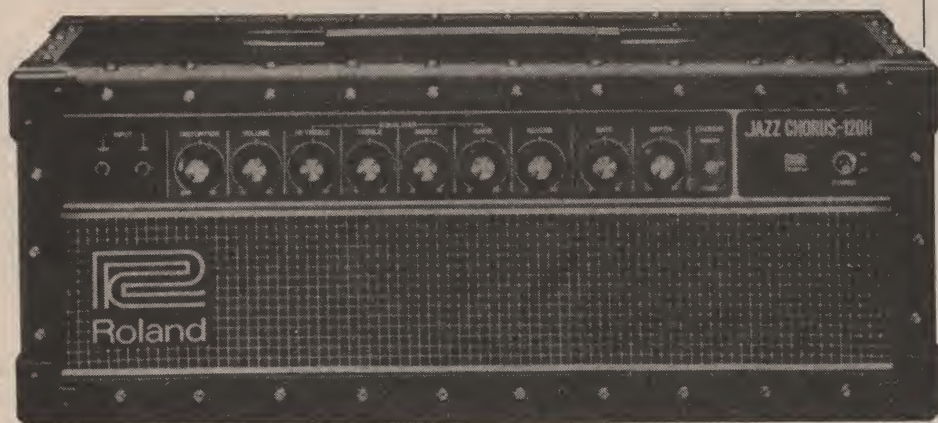## A Smart New Performer That's All Head

The JC-120H is a guitar amplifier head that offers 120 watts RMS of power. Equalization and Manual/Fixed Chorus Mode circuitry identical to the new JC-77 are used on the JC-120H. The unit is priced at $550.

Spirit 40A Amp.

MSQ-100 MIDI Digital Keyboard Controller

Jazz Chorus 120H

A new Color control gives the user the ability to add brilliance to the sound, making the amps ideal for the "slap" style of bass playing. The new Bus System, similar to the system on the SCL amp line, is convenient for stacking amps or running effects loops.

The SCB-100 powers a fifteen inch speaker with 100 watts RMS and is priced at $660. With 60 watts RMS and a twelve inch speaker, the SCB-60 is priced at $480. $360 will buy the SCB-40, which has 40 watts of power and uses a ten inch speaker.

The Super Cube Sound = Great Sound Squared

The SCL line of guitar amplifiers are a complete remake and upgrade

Instant Classic: The JC-77 Jazz Chorus Amp

The JC-77 brings a new size and some exciting new features to the classic Jazz Chorus line of amplifiers. Rated at 80 watts RMS, the JC-77 has two newly designed ten inch speakers that are capable of both tremendous clarity and hard distortion.

A Manual Mode has been added to the famous chorus section of this amp. Fixed Mode provides the traditional Jazz Chorus sound, but Manual Mode allows the individual adjustment of chorus Rate and Depth.

A new Equalizer section gives control of four frequency ranges to the user. In addition to Bass, Mid, and Treble, a Hi-Treble control is included. The new JC-77 is priced at $625.

Super Cube Bass: Its Boom Is Bigger Than Its Box

The new Super Cube Bass amps pack a lot of bass sound into a very compact space. While the Super Cube Bass amps are larger than their predecessors, they retain a very compact design and give superior low frequency sound. The amps also feature newly designed speakers including a fifteen inch speaker in the SCB-100.

JC-77 Amp

Super Cube Bass

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of the popular Cube amp line. The amps are larger than previous Cubes and feature newly designed Overdrive, Reverb, and Pre-amp/Main Amp bussing circuits.

The Overdrive circuit is designed to give the user distortion similar to the Heavy Metal Pedal. A new Bus System using Pre-amp Out and Main In jacks is ideal for "stacking" multiple Super Cubes or for using the BOSS Play Bus and similar effects.

Featuring 100 watts RMS of power, the SCL-100 has a single fifteen inch speaker, two gain controls, Master Volume, three-band equalization, and a reverb control. The Super Cube 100 also has connection jacks for an external speaker and headphones, and is priced at $660.

The 60 watt Super Cube powers a twelve inch speaker and has similar controls as the SCL-100. The SCL-60 is priced at $475. The SCL-40 features a ten inch speaker, 40 watts RMS, and similar controls as the SCL-100 and SCL-60. The Super Cube 40 is a great buy at $360.

Space Age Materials and Design Highlight SRS Speakers

The SRS-80 and SRS-120 PA speakers from Roland employ sophisticated design elements and materials to produce sound of startling clarity and precision. A power handling capability of 120 watts, and two eight inch woofers with two horn tweeters are featured in the SRS-120. The SRS-80 has a single eight inch woofer, a three inch cone tweeter, and a power handling capacity of 80 watts.

Mountable on a tripod stand or from the ceiling or wall, the SRS speakers are extremely compact and durable. They will generate impressive sound pressure levels of 94 dBm (SRS-120) and 91 dBm (SRS-80). The SRS-120 is priced at $480, while the SRS-80 is marked at $270.

A Stereo Powered Monster

The SRA-4800 is an extremely powerful rack-mounted amplifier with outstanding specifications. At

240 watts per channel into eight ohms, the SRA-4800 is conservatively rated (many makers rate their power amps a four ohms). The amp is designed to run with loads as low as four ohms and the power output leaps to 360 watts per channel at that impedance.

Excellent audio characteristics are maintained by the SRA-4800 even when it is being driven to full power. Total harmonic distortion is less than 0.01% driven to 240 watts at 1 kHz. The unit's frequency response is 10 Hz to an amazing 60 kHz. Channel separation is 80 dB or more at 1 kHz with an eight ohm load. Signal-to-noise is measured at 110 dB or more IHF-A.

A specially designed cooling fan allows the unit to be run for long hours without overheating. Four protection circuits insure neither speakers nor operating circuits will be damaged. The SRA-4800 is priced at $1795.
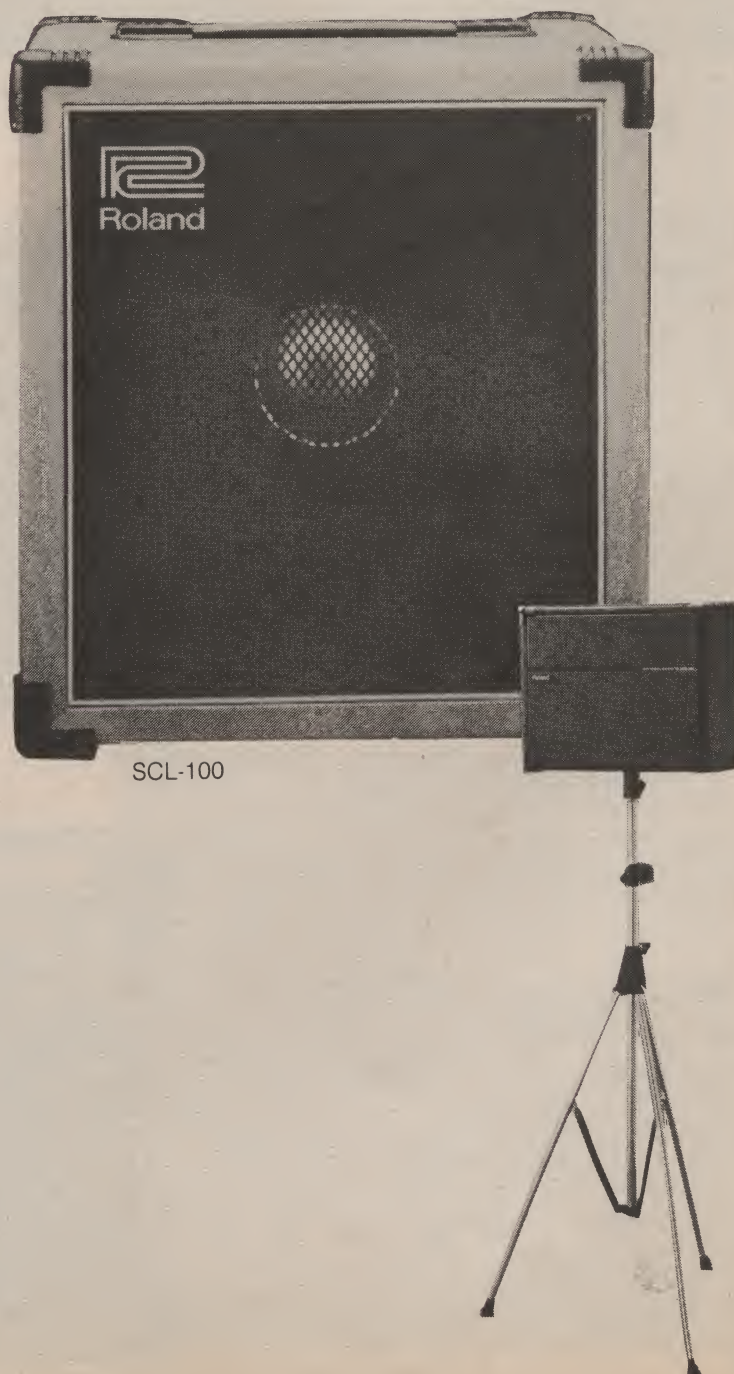
SCL-100

SRS-120 Speaker

SUZANNE CIANI

Creator of the Bang and Sizzle in Commercials

by Jess Ellis Knubis

If you haven't heard the name, you've certainly heard the music. As head of Ciani/Musica, Inc., Suzanne Ciani has produced, arranged, composed, and synthesized the sounds that sell for a roster of blue-ribbon companies that reads like a corporate "Who's Who in American Advertising." From Coca-Cola to Johnny Walker, Clairol, Black & Decker, DuPont, Atari, Avon, Eveready, Exedrin, Chevrolet; the list continues to film scores for the **Steppford Wives** *and the* **Incredible Shrinking Woman,** **Revenge of the Nerds** *and others. And in a direction that is breaking new ground, Ciani has become a principal progenitor of "commercial sound," beyond just music, in creating the sounds for a Bally pinball game, a G.E. electronic dishwasher and the Atari audio logo.*

From Cianni's beginnings as part of the pioneer synthesizer movement at Mills College in the late '60s, she has been in the midst of new development in the industry and has managed to bring the basis of that early avant-garde work to the forefront of today's most commercial and exciting music.

RUG: What you're doing with the synthesizer seems to go a lot farther than what the average person thinks of in terms of commercial synthesis, especially in designing sounds, in creating your own waveforms.

SC: Well, I use whatever is available to me and will go as far as, and get as meticulous as I can. For instance, with my digital system, in terms of designing sounds, one has a lot better view of what one is doing so you can get much more "nitt-gritty" sound orientation and sampling and recombining sampled sounds, editing them. We're making new sounds now. Really, everything is available both in synthesis from pure wave forms and manipulating recorded sounds from the real world on a sampling system.

Sometimes, for instance, we take just the first few milliseconds of an instrument sound, like a trumpet or a drum and then have the rest of the sound be something else, like a voice. And we splice these together digitally and make a new sound by combining both those worlds and then playing it on the keyboard or sequencer.

RUG: What is it that you look for, or listen for in designing sound for a commercial project or film score?

SC: Well, there are two things. One is the entire musical context of the sound so that we can blend and

orchestrate and design the sound so that it fits into the whole picture. When you're going electronics, you layer it and build it as you go. So, we might start with a drum sound and then add the bass or whatever. But as you go along you want to 'tweek' the sound and get it to fit so that it enhances the entire end product. You can't just dump things in there. (laughs)

RUG: And in the case where an agency comes to you for music for a specific product?

SC: That's the second case, where you take all the given information about the product and the client's presentation and then you design the sound to actually embody the characteristic or the personality of whatever it is you're trying to communicate. So in the case of, let's say a hi-tech product, that defines the area of sound. The first thing I would do is look at the product itself and see if there are any sounds that the product makes and maybe use that as a starting point. Sometimes, for instance in the GE dishwasher, the dishwasher actually made a beep. We didn't actually use that beep, but we took it as a starting point for the sound. Then after you've taken a look at the product for any characteristics it may have, then you look at what you're really trying to say or how you're trying to

position the product relative to other things. So if it were an IBM product, you'd look at how Apple is selling its product. Sometimes with a technological product, it isn't obvious that if you make a 'hi-tech' sound that that's the way to do it. It could be that going in the opposite direction is really what you want to do; like designing a new version of the traditional orchestra.

RUG: Could we address that point for a moment, the criticism that synthesizers are putting traditional instrumentalists out of work?

SC: Well, when I say a new version of the traditional orchestra, I'm still saying 'Look at that family of instruments and design sounds that are comparable to that family but still unique and different.' Synthesists ARE musicians and to say that we're putting musicians out of work is silly. We are musicians. Even though at times a synthesizer might imitate or emulate a more traditional sound, the purpose for those of us who are synthesists is not to replace that sound but to actually go beyond it in some way that's appropriate to what we're doing. If I wanted a 'cello I would use a 'cello. But if I needed a sound that is like a glittering, highlighted, super-speeding 'cello, I don't get that from the real acoustic instrument, I design

that. If I wanted the realistic sound I would use the real player.

RUG: Do you use sampling a great deal as a basis for sounds?
SC: I think that for any one of these tools...each person develops their own unique, customized way of using it. And for me, sampling has never been to build up a library of sounds that are available in the real world. I use it more as a production tool to make unusual sounds. I do know people who have libraries of every pitch of Fender bass and every pitch of trumpet and so forth. And I don't use it like that because you still don't get the performance aspect out of that. So it's not to replace a real instrument, even though with the new sampling programs there is the possibility of making really convincing traditional sounds...that's only one small part of what we want to do and what's available.

RUG: There's the well-known example of your supernatural sound of a soda bottle being opened, the pop and bubbles fizzing, that the listener assumes is the real thing.
SC: That sound was done a long time ago and if I would have had available to me then what I have available now, I don't think it would have turned out any better, but I would have started with the real sound. And there is a small component of the real sound in there, but primarily it was done on the Buchla and that was for getting the bubbles to read. It does sound very realistic and it's not.

RUG: Do you think that's an important part of what a synthesist should and will be doing? Music, after all is only a small part of what we hear.
SC: I think it's important. But I only have the outlet as it's made available to me. So it's two-sided, what you can do and also, you have to create a demand for it. That was an unusual case where they were willing to experiment and in some cases that's not true. As busy as we are, it's very hard for us to 'spec' things, 'Gee, that would be great for this product. Let's see if they'll buy it.' Because the sound is only a very small part of a much larger campaign, idea, project, a whole thing,

so I think that if there was more of a demand for it there would be more creativity.

RUG: Let's shift gears and go back to the beginning. How did you get involved in all this?
SC: My favorite question. (laughs)

RUG: I'll bet...
SC: You know, I can't even think back that far. (laughs) A long time ago, about 16 years ago, I was in graduate school in composition and I encountered it; which is to say, I ran into a synthesizer and that was it. At that time, there weren't any individually owned synthesizers. There were a couple of centers, one at MIT and one at Mills College. I had seen some computer work being done by this sort of eccentric professor at MIT. That was my first taste of it. And then when I went to the West Coast, they had a Poly Moog and a Buchla. And from there I went to work at Don Buchla's company. I soldered things and put them together. And from there, I went to Stanford, where, the originator of computer music, really, Max Matthews, was teaching as a special instructor. So I studied with him and with John Chowning. He's the one responsible for the FM system that's now found it's way into commercially available instruments. Anyway, after that, I went to L.A. I've always had one foot in commercial music and one foot in my sort of avante-garde personality, so I then went to New York to pursue the artistic side and ended up having to survive. So I got more into commercial music. And I still have the artistic; the sort of dual musical focus. The album work that I do is my very personal artistic work and the television, film stuff is the commercial outlet. So I haven't tried to make my records terribly commercial.

RUG: You're referring to *Seven Waves*?
SC: Yeah...good old *Seven Waves*. It's coming out on Atlantic soon. On a little tiny label on Atlantic called Finnidar.

RUG: The album was first released in Japan right?
SC: Yeah, on Victor, a little over a year ago.

RUG: How has it been received?
SC: Well, they've sold what was pressed. We had a little difficulty communicating across the distance. And I started a second album in a slightly different direction which was what they asked for. It was what I felt like doing anyway, but it turned out that they wanted one like the first one.

RUG: Is *Seven Waves* available in the U.S. now?
SC: Only at two outlets, Starmagic in San Francisco and Starmagic in New York. It's selling on a very small scale. But that's been the only outlet to hear it. It's trickly when you're not playing the large scale commercial game, as far as distribution, because if people ask for it and it's not there....But it is available through us if anyone wants to go to the trouble. (Ciani/Musica, Inc., 1650 Broadway, Suite 1405, New York 10019)

RUG: It must be quite a different experience to work on an album after spending most of your time in the confines of 30 and 60 second spots.
SC: I think in any case, what one brings to any problem to solve it is everything you know and all you experience. So that's the amorphous reservoir of everything. To be more specific, I think it's important to keep in mind a certain taste level. The things that endure, that work, have a kind of perfection to them. These things have a kind of purity. Let's just say you go for it until you're satisfied that there's no room for saying, 'aah, that's good enough'. I think what distinguishes what we do is a level in integrity which is constantly having us ask, 'Is this the best we can do?' 'Is that REALLY the right bass sound?' 'Can we make it better?', 'Is it right all the way through?'. So it does get to be very scrutinizing and meticulous. We do take the time to do it and if anything doesn't SEEM right, it isn't. The other thing is to always keep it exciting by not repeating yourself. The interest that you have in doing it comes out in the final product. So that might mean a whole new approach and that's where technology comes in, it's so great.

The equipment and the software

is always changing and this is a stimulus in thinking of things in new ways. And that keeps it exciting. I really feed off the fact that it's always different.

RUG: Is it difficult to stay 'state-of-the-art'?
SC: I tell you, not only does it not stop, it gets worse. But by the same token, new for new's sake isn't important. I have instruments that have been sitting around for years. So it's important not just to be new but it is a way of thinking, to not repeat yourself. Even though I've had an instrument for 15 years, I'll still use it in new ways. I approach each new assignment with a blank slate.

RUG: Is it difficult to please the variety of people involved in a commercial project?
SC: I think it's important as a sound designer that you be confident and firm about it. I would say in the early days that a lot of difficulties come from not being determined. Now, as a designer, you are the authority. You are, even though you want to leave room for input and listen to the people who are on the other side. It's your job to present the solutions. So the danger is that your audience would lose confidence in your taste. So if you're working with these people you have to project that confidence because they may have feelings about what's right or not right. But they know that if they had only themselves to trust, why would they need you and then they might even feel worse 'cause you took their opinion and who are they...(laughs)...the psychological games that go on.

In synthesis, where there are so many options, it's important to really narrow those down. I present ONE and that's it. Because that's my job, to decide what that is. But I will lisen and sometimes there's valuable background information that I wasn't aware of that might have to be included.

RUG: What was your first commercial experience?
SC: When I was in graduate school in 1968.

RUG: Did you find resistance to your work then?
SC: The biggest block at the time was the shear 'unknown-ness' of the synthesizer. It was like carrying a big heavy rock around all the time, nobody had heard the word. It was like a real black space. Now at least there's a common vocabulary, to an extent. People have heard of it.

RUG: Speaking of common vocabulary of another sort, what's your reaction to MIDI?
SC: I think MIDI is terrific. It's the beginning. It's at least an acknowledgement by the industry that they're all there, participating together, and that's an important breakthrough. I'm looking forward to what will continue to happen with that mentality. To make a statement about the machines as a collection, in the same way as a traditional orchestra, you may be in love with the violin but you still know that the piccolo is important. They really are a family of instruments and MIDI is wonderful, all these devices that get them to work together are terrific.

One Roland device that I think was way ahead of its time was the MC4. Tomita, for instance, couldn't have done what he did without it. It allows all sorts of nuance to be programmed and that's how he got all those wonderful, non-rigid textures. A lot of electronics today are characterized by a kind of pulsating, consistent, unrelenting sound and that's the kind of thing the machines love to do. And what Roland was able to do with the MC4 and MC8 was a more graceful and less machine-like thing. And that requires a lot more patience on the programmers side, too. It's hard to get that nuance in, the dynamics and pacing and so forth. And I couldn't have done *Seven Waves* without it because I was very much involved with getting that kind of sensual and graceful and subtle and coloristic musical approach.

RUG: Do you foresee commercially available synthesizer software programs? Will there be a 'Ciani Software, Inc.'?
SC: We're designing software for our own uses but I wouldn't get into the marketing of that. Not that all those possibilities don't exist. It's really just a question of how thin you want to spread yourself.

RUG: How many people do you have on staff?
SC: Well, I have four people in the office all the time, then I have free-lance group of three, what I call, electronic creative associates, people who specialize in synthesis, two arrangers or overseers, producers, and an engineer. It's a big group.

RUG: Where is Ciani/Musica going?
SC: Well, I just try to keep it interesting. I'm building a studio to answer the needs of synthesists, to be available to the special needs of electronics. And I'm very excited about the record coming out in the U.S. I would love it if that gave me some inspiration...you know, I want to sell some records. And I'm also doing some more commercial stuff, some songs that are more obviously commercial. But I guess there's a certain amount of satisfaction that I get out of the 'artistic' stuff.

RUG: Has interest in synthesized music leveled off or is there still growth?
SC: Synthesizers are just starting. Unless they shut off the electricity, then it might stop, but it's really just starting. Predictably, there will be a reaction against it at some point. Whenever anything gets big it gets a reaction, so we all could go to country-western and acoustic guitars or something for a year.

RUG: What do you see yourself doing in 15 years?
SC: Probably just having the time to do some very personal work. I have trouble finding that time now. It's always pressure and it's always busy and I enjoy that. But there is another side that is not coming out...or I may be finished with that completely. I'm totally open, I'm not pre-programmed. I do it a day at a time. I'm very intrigued by the whole new generation of synthesists coming up. You know, everybody goes through this kind of initial love affair and then there's a settled-in stage. Well, I'm in that settled-in stage, even though it's still exciting. But part of my excitement is in working with the new generation, probably in the role of producer and in encouraging, and in making it possible for someone to do that they have to say in that medium.

RUG: Grandmother Ciani, huh?
SC: (laughs) Grandmother Ciani!

ROLAND OFFERS ELECTRONIC MUSIC SEMINARS

ROLAND FEATURE

Technology has revolutionized the way music is created, performed and recorded. The microprocessor and VLSI (Very Large Scale Integrated) circuits are largely responsible for this revolution, bringing computer sophistication and control to electronic musical instruments. The impact this technology will have on the ways music is created and taught is the subject of the Electronic Music Seminar program by Roland.

This first-of-its-kind seminar program by Roland is in direct response to musicians, composers, hobbyists, video and film producers, and educators who want to know how to make the best use of the latest music oriented technology. Roland launched its program with a presentation in Seattle, Washington on November 7. The second in the series of seminars will be in Atlanta, Georgia on December 1. Over the span of 1985, seminars will be held in most major cities in the United States.

Thomas L. Beckmen, President of RolandCorp US, has launched this program in the same spirit that has contributed to the growth of his company. ''The company's success and strength has been directly related to a continued responsiveness to the need for innovative musical technology. Hand-in-hand with the new technology goes the responsibility to inform and educate. We at Roland must respond to that need.''

The keynote speaker for these seminars will be Grammy winning composer and N.A.R.A.S. (National Academy of Recording Arts and Sciences) Most Valuable Player award winning synthesist, Michael Boddicker. Boddicker has composed or performed on hit records by Michael Jackson, Earth Wind and fire, Al Jarreau, Quincy Jones, Olivia Newton-John, Laura Branigan, Stevie Wonder, and Barbra Streisand. His work can also be heard on sound tracks for *Buckaroo Bonzai, Revenge of the Nerds, Flashdance,* ''Fame,'' ''The Rockford Files,'' etc.

The one-day seminar will explore new applications of electronic music in live performance, recording, music composition, computers and music software, audio/video production, and music education. The action-packed day will conclude with a demonstration on making music for video.

For phone registration, call (213) 685-5141 or write the RolandCorp US, Electronic Music Seminar, 7200 Dominion Circle, Los Angeles, CA 90040. The registration fee is $195. There are no additional charges for any course materials and all fees include lunch.

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the best tunes that we've come up with, it's the new group, we've got a fantastic new drummer named Paul Wertico, and a great new utility musician, he plays guitar, he sings and he plays bass, he plays percussion, he's incredible, he's from Argentina, his name is Pedro Aznar. The album features both those guys quite heavily, and of course, Lyle and Steve Rogby, too. So, if the best record I've made up to this point scored a 30, then this record scored 100. I still can't believe that we got it in the can. It's not titled yet.

RUG: Where did you record it?
PM: In New York, at the Power Station.
RUG: With Manfred Eicher?
PM: No, this one I produced. But also on this record, it's probably going to be the first one that really features the Roland guitar with the Synclavier. There are three tunes where it's very prominent.

RUG: What about the future of the Pat Metheny sound, more synthesizer based music?
PM: Yeah, I think soon, sometime within the next year, I'm going to have to do a solo record just with the digital guitar and in fact, I won't have to go into the studio to do it. I can do it right here, on the floppy disc.

RUG: You can 'phone in your part'?
PM: Just about. In fact that' not far away at all. They've already talking about hooking up modems between the factory and some of the users in order to transfer discs, and if you can do that, it's literally phoning in your part.

Roland

Pat Metheny:
(Continued from Pg. 23)

not a group record. It's me and Charlie Haden and Billy Higgins. The first side is all other people's music, three Ornette Coleman tunes, a tune by Horace Silver and a tune that Charlie wrote. And the second side is a couple of my tunes, one of which is really set up for a lot of improvising. And it's nice, I really like it. The album is called ''Rejoicing''. And after that, in September, there's a group record that we just did a couple weeks ago. It's...it's the BEST experience of my life, captured on a record. I mean, it's one of those things were we went into a studio for four days and *everything* worked. I mean, it's

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# Computers and Plotters Take the Place of Drafting Tables and Pencils

Productivity is the personal and societal imperative of the eighties. In search of increased productivity designers, engineers, and manufacturers are trading drafting tables for computers, CAD/CAM (Computer Aided Design/Computer Aided Manufacturing) programs, plotters and variety of computer controlled manufacturing machinery. The by-product of this search is increased time for innovative and creative thought and design. It is predicted that by the early 1990s there will be one CAD work station for every two drafting professionals.

For nearly a decade, CAD systems have been available in mainframe computers. These systems cost hundreds of thousands of dollars, but still proliferated because of their bottom-line benefits in productivity. Recently, programs like AutoCAD by Autodesk of Mill Valley, California have allowed the microcomputer to get in on the design act. Microcomputers by IBM, Apple, or others can be used to construct design systems by themselves or networked with other micro or main-frame computers.

According to Kevin O'Lone, customer support executive for Autodesk, the micros can be used to replace their larger 32-bit cousins because the micro's software programs are much more sophisticated now, using highly developed sets of algorhythms to deal with any internal bottle-necking created by the smaller processing units used in micros. The tremendous reduction in cost of CAD systems using micros makes them accessible to many more people. AutoCAD, according to O'Lone, now has over 8,000 installed stations in the United States. "Our users are very vocal," says O'Lone. "They're constantly giving us feedback which allows us to improve our product."

Productivity was again noted by O'Lone as the number one benefit AutoCAD had brought to its users. "A productivity increase ratio of three-to-one or better is reported by our users." This ratio can increase as the user compiles his library of what O'Lone calls "building blocks." Building blocks are design elements that are used repeatedly by a given profession. In time, a very extensive central library of building blocks can be created. The building blocks can then be organized in groups or "arrays" that are commonly used together.
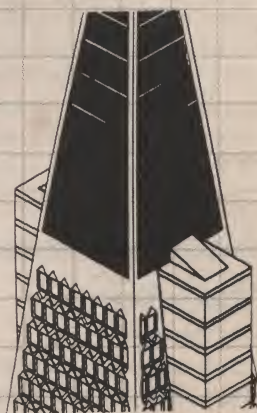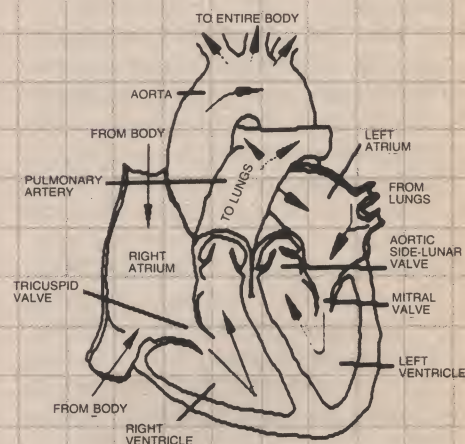
As the library grows, the speed of the endeavour increases. People use this time savings in different ways,

according to O'Lone. "Some people use the time to knock out three times the work, but others use it to be more innovative. These people give us the best suggestions for improving our software. Our users recently compiled a 45 item 'wish list.' We were able to implement 43 of those items in our latest software revisions." As a result of these suggestions, Autodesk was able to implement a feature called "Extracting." Extracting allows the user to bring up data that is pertinent to the design; stress levels of materials, cost and availability figures can all be used in this way.

Studies show that the aerospace industry has the highest penetration of CAD usage, but users come from all the various engineering fields, architecture, and electronic design. With the inexpensive nature of a micro-based CAD system, cabinet makers, contractors, and other smaller businesses can now utilize these state-of-the-art design facilities.

According to O'Lone, manufacturers are beginning to use CAD/CAM in exciting new ways. "They're designing parts using AutoCAD and then sending data to vertical milling machines and so on, that actually make the part. I have another customer who sells a turnkey laser cutting system, using a flat bed laser cutter. The system is used to design the part using AutoCAD, then the appropriate numerical sequences are sent to the cutting machine."

Tomorrow's industry will rely heavily on computer aided design and computer aided manufacturing. Forward looking companies, intent on improving productivity, are already implementing these concepts and are competing successfully in the international marketplace. If you or your business are also searching for improved productivity, a personal computer, Roland plotter, and AutoCAD are good places to start looking.

DXY-880 Eight Pen Intelligent X-Y Plotter

Elegant business and CAD/CAM (Computer Aided Design/Computer Aided Manufacturing) applications are the forte of the new DXY-880 plotter from Roland. *HP-GL (Hewlett-Packard Graphics Language) emulation on the DXY-880 means that hundreds of the most sophisticated software packages will work with the plotter.

The DXY-880 has the added advantage of being able to operate where space is scarce. It can sit on a table in a flat stance or it can operate at a 60 degree vertical angle, and the unit's compact size further enhances its operating efficiency.

Additional features of the DXY-880 include: both serial and parallel interfaces, a multi-speed digitizer, three kilobyte buffer, 24 K ROM, 0.05 mm resolution, 200 mm per second speed, and a selection of international character fonts. At a retail price of only $1295, the DXY-880 represents an outstanding value in features, software support, and price.

*HP-GL is a trademark of Hewlett-Packard Corporation.

CC-121 RGB High Resolution Color Monitor

Colors that seem to lift off the screen and extremely crisp black and white are the hallmarks of the new CC-121 high resolution color monitor from Roland. These outstanding performance characteristics are due to the CC-121's new black-tint CRT with a non-interlaced resolution of 640 X 200 and a 0.37 mm dot pitch.

The CC-121 operates with a wide variety of computers including Apple and IBM models and is easy to connect using an eight-pin cable.

Roland will be marketing RGB color cards to make interfacing with some computers easier. The retail price of the CC-121 RGB Color Monitor is $599.00.
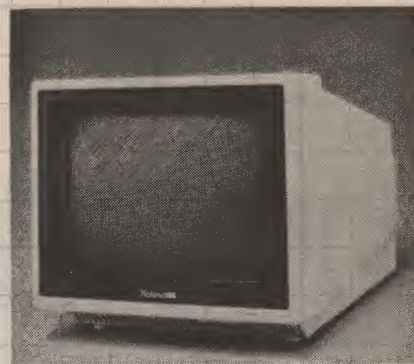
MPU-APL: MIDI-On-A-Card for Apple Computers

Roland's MPU-401 was the world's first "intelligent" interface for computers and electronic musical instruments. The essential elements of the MPU-401 have been repackaged in card form, MPU-APL, for the Apple II computers.

An intelligent interface has its own computer memory that allows it to be much more than a simple connecting device. The MPU-401 operates as a background processing device using interrupts to the host computer to send or receive recorded MIDI data. This extra level of computer processing allows the host computer to perform other tasks and make it possible for software programs to be much more sophisticated.

The MPU-APL offers one MIDI input and two MIDI outputs; one of these outputs is switchable to a MIDI Thru. All software written for the MPU-401 and the Apple computers will work with the MPU-APL including Roland's MRC-APL and programs by software publishers Cherry Lane and Sight and Sound. Roland's MRC-APL software is called the MIDI Music Recorder and functions as an eight track MIDI recording and playback device. The program also provides editing features such as overdubbing, time correction, MIDI channel reassignment, and cursor key access to all functions.

MIDI MODULAR:

MIDI Technology goes Modular
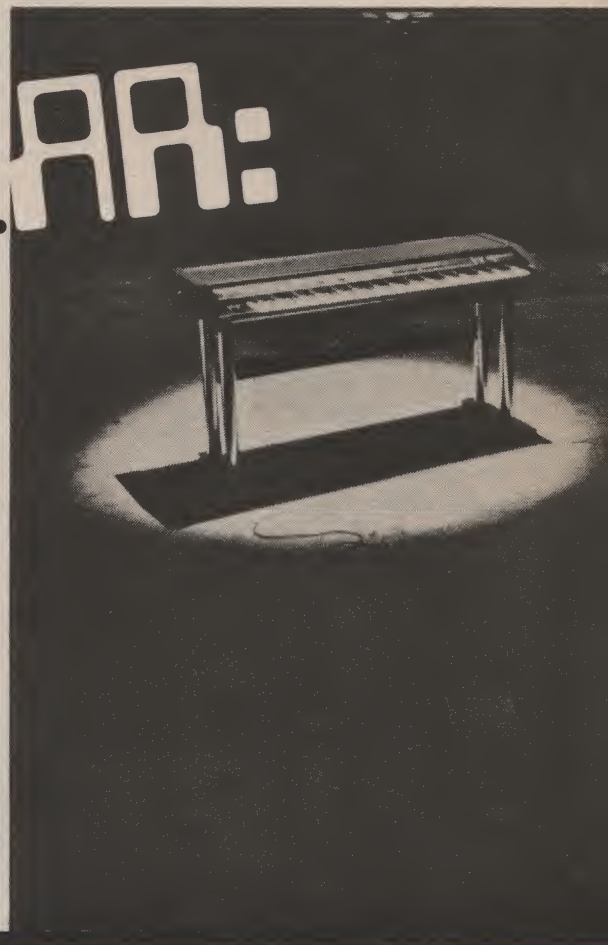
by Ray Baragary

For several decades, the supporters of electronic musical instruments on the one hand, and the proponents of acoustic/electric instruments on the other, have been sharply divided on two key issues. The advocates of electronic instruments have boasted of the nearly limitless timbres of their chameleon-like machines. While the acoustic/electric enthusiasts have countered with the argument that their music is more expressive because of the unique manual techniques of their various instruments.

MIDI is showing its potential to be the solution to this emotional argument by creating a new equa-tion, a new way of distilling the best features of both instrument groups into a new instrument form. The expressive sounds made available by the playing techniques of the guitar, piano keyboard, or drum can now, through MIDI, be combined with the incredible timbres of the synthesizer and other electronic sound sources. Dynamics, damper pedal, string bends, harmonics, and so on, can be used with after-touch, envelope, LFO effects, and timbres from thunder to whispering flute.

In order to make this artistic equation work, designers had to take a close look at the various elements, the building blocks, that are used to construct a musical instrument. In doing so, MIDI designers have brought the component, or modular concept into the musical instrument field.

With the exception of vocalizing, most music starts at the musician's hands. The hands are the points where musician and instrument meet. Countless hours are spent over many years training the hands to be disciplined and responsive communicators of the artist's inner music. This meeting point is where human expression, touch dynamics, and so on must be converted into the mechanics of the individual instrument. In the electronic instrument, this is the point where the techniques of the hand must be translated into the language of the computer chips that control today's instruments.

In the past this meeting point of musician and instrument has been the weakest link in the electronic chain. Keyboard, drum and pitch-to-voltage synthesizers have had

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Roland Product Specialist, Eric Persing surrounded by a MIDI Instrument Network.

control mechanisms that were merely a series of on and off switches. Expression was limited to two conditions. Through the years, clever musicians and engineers have electronically emulated various elements of performance techniques (tremelo, portamento, etc.). And technology evolved to the point that several years ago a "price is no object" synthesizer could be built and controlled by almost any instrumental technique. Few of us shop in the "price is no object" market and despite the efforts of those clever artists, the subtlest nuances of musical performance could not be emulated, so the basic limitations of the on/off synthesizer persisted. The artist either learned keyboard and synthesizer techniques or gave up the timbral flexibility of the electronic instruments.

MIDI has provided the vehicle to translate the subtleties of touch and technique musicians have worked so hard to develop into a data format that synthesizers and other electronic sound sources can understand. It has also made it easier to implement the component concept.

In the past synthesizers contained some kind of sending device (keyboard, etc), and self contained sources and modifiers (oscillators, modulation sources, filters, etc.). Want another synthesizer? Buy another keyboard. The contemporary notion is, buy one quality controller (keyboard, guitar, drum-pad) suited to you and your playing style, then add synthesizers and sound modules as they are needed. So the guitar synthesis can have the same layering and sound generating power as the keyboard synthesis by buying

the same modular units.

At Roland, we call the hand/instrument component a controller or instrument controller. Controllers are designed so that they realize as much expressive capability as possible. Individual packaging of components also allows instrumentalists to choose controllers that best suit their playing style and techniques. Are you a trained pianist who prefers wooden keys and a "piano feel?" Then the MKB-1000 with 88 wooden keys and piano touch would be right for you. Are you a guitarist who prefers a specific scale length and fretboard design, and the G-707 is just too space age looking for your tastes? Then the G-808, G-303, or G-505 is probably right for you. Are your "chops" really well developed? Then you'll want a more refined and sensitive

MKB-1000 MIDI Keyboard

MKS-80 Super Jupiter

controller. Are you a "hacker" or just short of cash? Then a less sophisticated and less expensive controller is your ticket. No matter which controller you select, the diverse world of MIDI instruments and sound sources is available to you.

Picture a traditional synthesizer with its keyboard removed. What you have left is a box that contains oscillators, filters and lot of other things that generate or modify sounds. This box is what we at Roland call a sound source. Sound sources are not just synthesizers, they can be electronic pianos, drum machines, vocoders, or you-name-it. With MIDI and a controller converting your performance into a standard electronic data format, all your sound source needs is the ability to read and respond to the MIDI signal. If you are unsure or confused regarding what MIDI will and will not send, consult the Understanding Technology and Interface articles in this issue of the RUG. You should also consult the MIDI implementation sheets in the owner's manual of your instrument.

By combining a single controller and a sound source, you can recreate the standard synthesizer, but you can also do some other very interesting things. You could play drums from a keyboard controller; totally dynamic drums by combining a MKB-1000/300 or HP-400 with a TR-909 or TR-707. A guitarist could play drums too or, if he preferred, be-bop organ and bright brass simultaneously using a GR-700 and MKS-30, JX-3P, or other sound source. For a real cacophony the musician could play drums, elec-

tronic piano, and four or five synthesizers simultaneously.

Having a lot of instruments, each with its own sound, playing along with you is an exciting experience. But, after the initial excitement, this elaborately layered sound quickly passes the musical point-of-no-return. However, if one musician could play individual parts and store those parts for later playback on assigned sound sources, that one musician could sound like a whole band. This is where a new component comes in, the sequence controller.

The sequence controller is the electronic data equivalent of the audio tape recorder complete with tracks and overdubbing. It stores the MIDI performance data for playback or editing. The MSQ-100, MSQ-700, and PR-800 are Roland sequence controllers. They have the ability to store and edit large quantities of MIDI data and since they deal with the mechanics of performance, sequence controllers can do things that tape recorders can't like time correct or change tempo without changing pitch. Sequence controllers are really computers in disguise that are designed solely for musical applications. From the sequence controller it is a logical step to the development of musical interfaces for the generic home computer.

The MPU-401 from Roland is an "intelligent interface" that translates "computerese" and the musical data language, MIDI. The term intelligent interface is used because the MPU-401 has its own computer chip that makes the whole translation process easier and faster

for the computer that it's plugged into. Home computers are capable of a wide variety of functions, in addition to any musical uses, from games to business accounting. This versatility is made possible by the thousands of software programs available for home computers. Software programs for many different musical applications using MIDI and the MPU-401 are available from Roland, independent developers, and music publishers like Cherry Lane and Sight and Sound.

From home entertainment centers to stage-tough MIDI instrument setups, a musician can put together an exciting musical network using the building blocks of controllers, sound modules, and sequence controllers. By adding a mixer and multitrack tape recorder to the MIDI network, one musician can now create "finished product" quality audio recordings. By the further addition of the Roland Sync Box (SBX-80) and a video tape recorder, video and film sound track work can be accomplished and taken all the way up to the final edit stage.

MIDI is the first truly elegant and artistic bridge between the expressive capabilities of the musician's techniques and the exciting technologies of audio, video, and electronic musical instruments. The creative tools that MIDI makes possible are less expensive, more responsive, and offer the inflationary hedge of an interface system that will accommodate future technical advances. That's a rare combination in today's world.

Roland

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Put Some Swing into that Electronic Thing

by Dennis Kahle

Dennis Kahle will be contributing a regular column to the Roland Users Group magazine. Kahle is a percussionist with a wide range of performing and recording credits. He is equally at ease performing with a symphony orchestra or a jazz combo. Possessing graduate degrees in music and composition, Kahle is a welcome addition to the RUG family. His column this issue will help you put some swing into that thing.

Much has been written lately criticizing the "mechanical" or "sterile" qualities of rhythm machines. There may be some justification for these criticisms: in the hands of a non-percussionist, rhythm machines can sound not only rigid, but plain unmusical. Likewise, some excellent players have gotten caught up in the "technology trap" and seems to be more interested in demonstrating the machine's capabilities than in programming rhythms that swing.

You can avoid this musical straightjacket if you envision your rhythm machine as an electronic adjunct to an acoustic set. There, your primary responsibility is that of timekeeper, and this is usually accomplished by keeping it simple and making it swing. If you are a non-drummer, listen to the patterns played on acoustic sets to see/hear what I mean.

What is swing (sometimes called groove)? Put very simply, <u>swing is a feeling of forward movement within a metronomically steady pulse.</u> Don't confuse swing with "playing on top of the beat." We'll cover that in a future column. In better ensembles, the entire band swings. Failing that, at least the rhythm section should swing, but there is one inviolate certainty: if the drummer doesn't, the band won't!

When I am called to program my Roland or BOSS rhythm machine for a new song (I have a DR-110, and TR-909), the music itself generally suggests which type of rhythm would be most appropriate, e.g. reggae, funk, disco, etc. Once I have selected the type of rhythm I wish to use, I can make it swing by utilizing a three-step compositional process, as follows: 1) Program the foundation; 2) Correct the orchestration; 3) Add embellishments. Here is how this process is applied to a basic, medium shuffle rhythm, four bars long, with three bars of time and one bar of fill.

Step 1 — Foundation. Discretion should be exercised here, since this base rhythm will set the stage for what is to follow. You should limit your instrumentation to closed hi-hat, snare drum, and bass drum only. Leave lots of space that can be filled in later. Above all, try to establish a single spot within a bar that is the "dump point," that is, the tension that you've built seems to release there. In most rock music, this will be the second or fourth quarter note of the bar. Don't program patterns which would be technically impossible on an acoustic drum set. The example shown in diagrams 1 and 1a satisfies all the above criteria.

Program this pattern into your rhythm machine using step write and shuffle mode. You now have a foundation upon which you can build. Experiment with the tempo until you find one which seems to feel most comfortable, taking care to allow for vocal or instrumental limitations within the song itself. A metronomic beat of a quarter note = 90 per minute is a good starting point.

Step 2 — Orchestration. <u>Without altering the foundation pattern,</u> begin to experiment with small changes in the instrumentation. You could, for example, substitute a rim shot for the snare drum on beat four. Or alternate open with closed hi-hat every other eighth note. The real-time programming capabilities of your Roland or BOSS rhythm machine aids this operation, because you can actually hear each trial before you commit it to memory or tape. Once you are satisfied with the orchestration, lock it into memory or store it.

Step 3 — Embellishment. This is the danger zone, the point at which many otherwise fine players succumb to visions of grandeur. The temptation to overprogram should be resisted at all cost, and it helps to think of the first bar as a microcosm of the four bar phrase. Just as you have established a dump point in the first bar, so should you throughout the phrase, and I recommend aiming for the first beat of the third and fifth time (the beginning of the second phrase) bars for the release. Accordingly, the last half of the second bar and the entire fourth bar should provide tension. Examples 2 and 3 suggest a second and fourth bar, respectively.

In example 2, I use hand claps judiciously to add unexpected variety and extra motion. I continue that motion with the tom-tom in order to dump into bar 3. Example 3 utilizes the same process, but with a twist. The hi-hat stops, providing not only variety but an incredible amount of tension. The pattern on the snare drum, bass drum and tom-toms is merely a notated acclerando, a simple, but effective device which provides motion. Program this pattern into your rhythm machine and you'll hear what I mean.

The compositional process outlined above is meant to provide the percussionist with a system of programming rhythms that swing. Additionally, I hope that non-percussionists, using MIDI connections to rhythm machines, can use this process to program patterns and songs that are more drum-like. Future columns will examine various contemporary rhythms in detail and suggest basic patches. One example of effective rhythm machine programming that swings is found on "Jump" by the Pointer Sisters. For "live" playing which is simple but really swings, Cindy Lauper's "She Bop" is my current favorite.

Example 3

Example 1

Step

Step		

Example 1: Step — ACCENT, RIDE, CRASH, HI-HAT, HAND CLAP, RIM SHOT, HI-TOM, MID-TOM, MID-TOM, SNARE DRUM, BASS DRUM

Example 1A

Example 2

Example 2A

Example 3: Step — ACCENT, RIDE, CRASH, HI-HAT, HAND CLAP, RIM SHOT, HI-TOM, MID-TOM, MID-TOM, SNARE DRUM, BASS DRUM

Example 3A

Example 4

Example 4A

SERVICE

Roland GR Systems:
Some Questions and Answers

by Mark Altekruse

Roland has been making guitar synthesizers since 1977. The GR-500 was the first in a line that has also included the GR-100 and GR-300. The GR-700 was introduced to the public in January of 1984. As the first programmable polyphonic synthesizer for guitar, the GR-700 has features beyond those of many sophisticated keyboard synthesizers. Keyboardists have had the opportunity to assimilate the technology of the synthesizer over the last two decades. Guitarists, for the most part, haven't had that opportunity.

The GR-700 is getting into the hands of more and more people everyday. These people, unfamiliar with synthesizers, are calling Roland's Service and Product Support departments with a lot of questions. We've decided to answer, in print, the most often asked questions.

I've tried out the GR-700 and found that it doesn't respond fast enough to my playing. Is there a tracking problem?

The correct term, in this case, is lag time. When a string is played on a guitar controller, it vibrates at a certain rate. A device that counts the vibrations of the string is used to send this information (pitch, on/off, etc.) to the GR-700's oscillators. The counter is very fast, accomplishing its job within two cycles of the strings vibration. This complex processing system, when used with certain "patches" on the GR-700, can produce a short lag time.

The lag time can be corrected/adjusted in two ways. First, the envelope of the patch and the sensitivity of the guitar controller can be adjusted. Second, the frets of the guitar could be wired to transmit pitch instantly just like the on/off switching of the keyboard synthesizer. The first solution is acceptable, but might not totally solve the lag time problem. The second solution solves the problem, but the guitarist must give up all of the techniques that make his instrument unique; i.e. string bends, hammerons, and harmonics. After trying the first solution and avoiding the second, what else can be done?

We've found that if a guitar controller is properly set-up (intonated etc.) and patches and sensitivity are adjusted to compensate for an individual's playing style, 99% of the problems are solved. What about the 1%? You may have to learn to live with a little lag time. You may have to learn to "play on top of the beat" like instrumentalists in the back rows of an orchestra must, so that their sound will hit the front row at the same time as the instruments being played from those front rows.
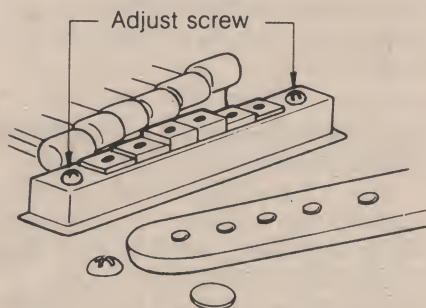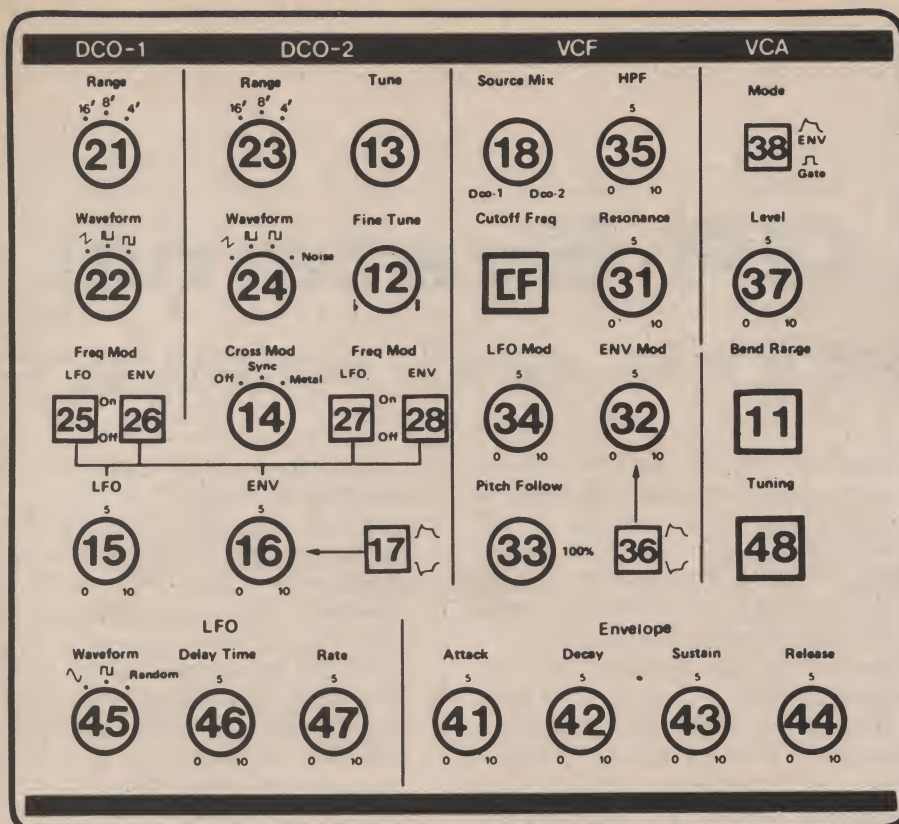

Synthesizer pickup adjustment

Sometimes while I'm playing I will find that one or two notes that I am sustaining will "jump" octaves by themselves. Is there something wrong with my guitar controller or my synth? If not, what can I do to keep this from happening?

The octave jumping that you are referring to is called "glitching." A glitch occurs when the synthesizer module misinterprets the note you are playing or misreads the strings vibration. The resultant sound is often less than satisfactory, but there is a way to prevent the problem. Since the module is solely dependent on a good, solid string vibration in order to accurately reproduce the note or chord you are playing, it is essential the guitar be in tune with itself! A guitar controller, or any guitar for that matter, can only be in tune with itself if it has undergone a process known as intonation. Learning how to intonate a guitar is not difficult. If you are not familiar with the process, we recommend that you see a qualified guitar technician in your area. This service should be performed on a regular basis.

When I try to tune my GR-707 synthesizer to a tuner, I can't get it to a center of A = 440 Hz. It usually is 10 to 15 cents flat or sharp. Is there something wrong with my module?

The GR-700 has a P-ROM which allows it to have multiple tuning centers. This is done because other countries do not use A = 440 Hz as their standard. Just like they don't use inches, they use centimeters etc. The GR-700 is set at the factory for a tuning of A = 442 Hz. It is a very simple process to readjust the module's tuning center. First, Turn on the GR-700 and wait until the display shows its default Bank and Patch numbers (1/1). Second, Press the Edit footswitch. The display will read CF on the left side and a percentage number on the right. Third, Press Edit numbers 4 and 8. This is the tune function of the GR-700. The display will read 48 in the left and a single number on the right.

EDIT MAP **GR·700**

DCO-1 | DCO-2 | VCF | VCA

Range (21) 16' 8' 4' — Range (23) 16' 8' 4' — Tune (13)

Waveform (22) — Waveform (24) Noise — Fine Tune (12)

Source Mix (18) Dco-1 Dco-2 — HPF (35) 5 0 10 — Mode (38) ENV Gate

Cutoff Freq [CF] — Resonance (31) 5 0 10 — Level (37) 5 0 10

Freq Mod LFO [25] On ENV [26] Off — Cross Mod Off Sync Metal (14) — Freq Mod LFO [27] On ENV [28] Off

LFO Mod (34) 5 0 10 — ENV Mod (32) 5 0 10 — Bend Range [11]

LFO (15) 5 0 10 — ENV (16) 5 0 10 — [17]

Pitch Follow (33) 100% — (36) — Tuning [48]

LFO
Waveform (45) ∿ ⊓ Random — Delay Time (46) 5 0 10 — Rate (47) 5 0 10

Envelope
Attack (41) 5 0 10 — Decay (42) 5 0 10 — Sustain (43) 5 0 10 — Release (44) 5 0 10

Fourth, plug a tuner (BOSS TU-12) in at the MONO Output of the GR-700. Fifth, Play the first string while depressing the Hold footswitch. A constant tone will sound. Sixth, make sure that only the synth sound is audible. Use your Balance control on the controller. Seventh, Turn the Edit/Resonance control until the meter on your tuner reads exactly A = 440 Hz. Eighth, Release the Hold and tune the guitar (change your Balance control so you hear the guitar) to the synth module. That's right, the guitar gets tuned to the module. Ninth, hit the Edit switch again, turn the Memory Protect switch off, hit the Write switch, hit a numbered footswitch and the new tuning center will be stored in memory.

I'm using the MIDI Out of the GR-700 into my Juno-106. When I bend a string, the Juno-106 plays only in half step jumps. What's wrong?

Although the GR-700's internal synthesizer will follow string bends, it will not output this information via MIDI. There is a chance that new PROMs will be available in the future to make string bending via MIDI feasible. Stay tuned for updates, as PROM modifications to your existing unit will be quick, easy, and very inexpensive.

I've tried using my volume pedal to control the VCF and Pitch Bend function on my GR-700. It works, but not great, what gives?

Your volume pedal probably uses a potentiometer with a value of 250K ohms. This value is too low to have much effect on your GR-700. Try using a BOSS FV-200 or another pedal with a rating of 500K ohms or more.

Is it necessary to use a PG-200 to create patches for my GR-700?

No, it's just easier. Edits and new patches can be made one parameter at a time using the GR-700's Edit mode. The PG-200 just makes all parameters available for edit simultaneously.

I haven't had much experience with synthesizers. How can I learn more about generating sounds and interfacing?

Many colleges now offer synthesizer courses through their music departments. For home study,

Roland publishes a four volume series of books entitled *The Synthesizer*. It is an in-depth look a synthesis and recording techniques for synthesizers. Check out the order blank in this issue of RUG for details. Some Roland dealers also stock this set as a service for their customers.

I have a GR-300 and one of your other guitar controllers, a G-505. I have heard that the GR-300 and your older controllers will not work with the GR-700. Is this true? If it is, how can I interface my system with the GR-700?

All that is required to use your GR-300 module with your GR-700 module is a US-2 Unit Selector, which functions like a 24 pin A/B box. Any of the Roland guitar controllers will work well with the GR-700. The controls on the instruments have a slightly different function when used with the different modules. This might make the plastic cover sheet on the G-202, G-303, G-505, and G-808 seem a little confusing. When using the GR-700 module, the three way mini toggle switch activates two touch sensitivity positions and a guitar only setting. When editing patches, the Resonance and other controls also take on new functions. Check your owner's manual for further clarification.
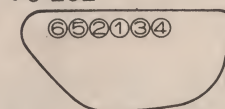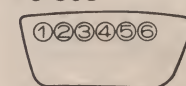

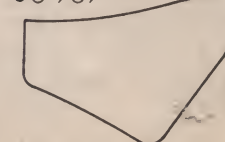● G-202 ⑥⑤②①③④ ↻ Output level increases
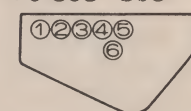
● G-303 808 ①②③④⑤ ⑥ ↻ Output level increases

● G-505 ①②③④⑤⑥ ↻ Output level increases

● G-707 ↻ Output level increases

Trimpos location on GR Controllers

Is there a particular brand or type of string that Roland recommends for the GR controllers?

The choice of strings depends on the style of music and technique of the individual player. But it is important to use a set of strings that has a uniform "core" between the first wound string and unwound string. For example, on a typically gauged set of light strings, the thicknesses are .10, .13, .17, .26, .36, .46. For an even response, the core thickness of the third string (.17) and the first wound string, the fourth (.26) should be the same.

If your technique causes an excessive amount of glitching or tracking errors on the lowest string (low E), you may want to substitute a lighter gauge string. In some cases, a lighter gauge set, perhaps beginning with a .009, would work better for you. Avoid using flat, semi-flat, or tape wound strings. These strings do not provide a strong enough fundamental note for the synth module. Remember, if you change string gauges, your controller should be intonated again.

What is that bar on the G-707?

The bar is called a stabilizing bar. The purpose is to eliminate unwanted neck and body vibration, so that the string can vibrate without interference. It also lowers the resonant point of the body well below the lowest string's fundamental pitch. This eliminates "dead spots" on the neck.

I have noticed that sometimes when I play relatively soft with my pick or fingers that no sound will occur at the module. Or sometimes when I play hard the module will glitch. Why is this happening?

A guitar controller is a sensitive instrument which can easily be adjusted to respond to your particular playing style. As on a standard guitar, the overall height of the synthesizer pickup can be raised or lowered according to the guitarist's playing style and the type of strings being used. The optimum distance should be within 0.5 mm for the first string and 0.8 for the sixth string. The next adjustment can be found on the back of the guitar controller. There are a series of six individual trim-pots for adjusting the sensitivity of each string. Since each controller has a somewhat dif-

ferent layout, the instrument's owner's manual should be consulted to determine which trim-pot is for which string. Care should be taken not to force the trim-pots past their detents. Damage to the trim-pots can invalidate the instrument's warranty.
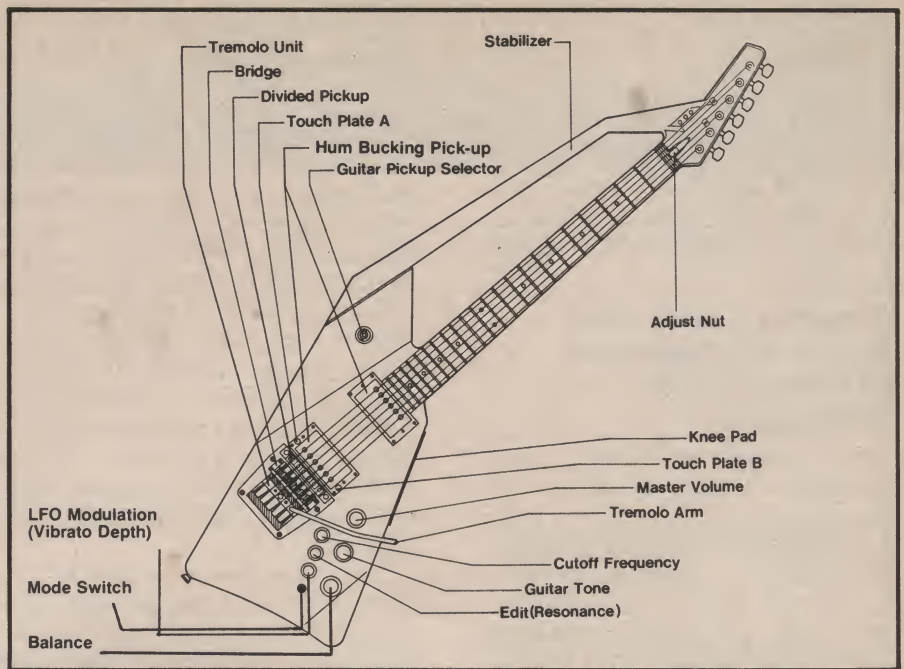
On the front of each guitar controller you will find a 3-way mini-toggle switch that can be used to adjust the overall sensitivity of the synth pickup. In the bottom position, only the sound of the guitar pickups will be available at the synth outputs. In the middle position, Touch Sensitivity I is located. This position requires a harder picking style to trigger the synthesizer. In the top or third position, Touch Sensitivity II is activated. This sensitivity setting only requires a very soft picking technique to trigger the synthesizer. The key to making the synth react with accuracy is experimentation. Adjust the guitar and learn which sensitivity setting works best with your style.

Sometimes when I'm playing on my G-707, the GR-700 module will play notes that I haven't played on the guitar. What causes this?

This situation can be corrected in two ways. First, make sure that the guitar is set-up properly and that the Hex pickup sensitivity has been adjusted for your playing style. Second, it is important to understand that your GR-700 module is very sensitive. Your technique should be

as clean and precise as possible. If you touch an adjacent string and it vibrates long enough for the module to read its pitch, the module will respond by playing that note. Also, many songs require that you play in the open position of the guitar. Although this may be effective for the song, please be aware that the strings on the controller vibrate just as they do on a normal guitar and they may cause the open strings to vibrate sympathetically. In short, avoid "ghost notes" and play as often as you can in closed positions on the guitar. Remember, your fingers now control a synthesizer.

I play a lot of techno-pop and R&B styles. It's necessary to play very staccato notes and chords accompanied with muting techniques. Most of the time when I play like this the GR-700 won't respond to what I'm playing. Is there any way to correct this problem?

Just as in the preceding question, make sure all adjustments are made to the guitar controller. The GR-700 will follow most guitar techniques if it receives a strong enough signal. Extremely short or muted notes may not send enough of the strings vibration for the module to read. For the styles of music you describe, we recommend that the staccato effect you require be programmed into the GR-700's memory as a patch.

≡Roland

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Roland DG:
(Continued from pg. 37)

The MPU-APL MIDI Processing Unit and software such as Roland's MRC-APL constitute a complete recording system for the Apple computer. The MPU-APL is priced at $150, while the MRC-APL software is $195.

Cherry Lane and Sight and Sound Publish MIDI Software

As expected, independent publishers and software developers are beginning to produce creative software for MIDI and Roland's MIDI Processing Unit. Some of the earliest and most creative packages have come from veteran music publishers Cherry Lane and Sight and Sound.·

Cherry Lane offers a variety of computer music packages from play along music and music education programs to the Pro Packages. These Pro Packages utilize the Roland MPU-401 and the user's computer and electronic musical instruments to create a multitrack recording system. Systems are available using Apple and IBM computers. The "Connections" software provides sixteen polyphonic tracks for recording and playback, punch-in and punch-out, note rhythm correction with up to thirty-second note resolution, fast-forward, erase, and other editing features.

Sight and Sound also offers software for a variety of applications including music education, home entertainment, and professional systems. Sight and Sound's professional software is based on the MPU-401 intelligent MIDI interface. The MPU-401 frees its host computer (the one it's connected to) from mundane tasks and Sight and Sound developers have used this capability to create packages that interact with the user and even generate music coordinated graphic displays on the computer monitor. Apple, IBM, and Commodore computers have all had software created for them by Sight and Sound.

Interested users can reach Sight and Sound in New Berlin, Wisconsin and Cherry Lane in Port Chester, New York. Product by both publishers is available at fine music stores everywhere.

Understanding Technology:

(Continued from pg. 14)

and dealing with the unrecordable MIDI codes. The SBX-80 will accept and store MIDI and simultaneously write S.M.P.T.E. code to tape all by itself. Rewind the tape, read it back, and the F.S.K. and MIDI outs on the SBX-80 will then sync all the parts of your music system without any help from the picture or the TV show. All you need is one free track on your audio tape recorder, and you will be in business.

"Can you show me a S.M.P.T.E. code 'word' so I can see which bits do what?" Sure, but it's going to require some space and we should do an analysis of the MIDI code first. In this first article, we've given you a basic idea of what a bit is, and why machines have to "read" in a way that is different from humans. Our second primer will show you how a code is put together, and how to read a bit map in binary, the language of on-off pulses that computers "read." Once we've done that, reading the S.M.P.T.E. bit maps will be much easier, so we'll put the S.M.P.T.E. code charts at the back of part two. if you're going to start building your MIDI system, you will need to read the MIDI bit map first, to check what functions work and what functions don't.

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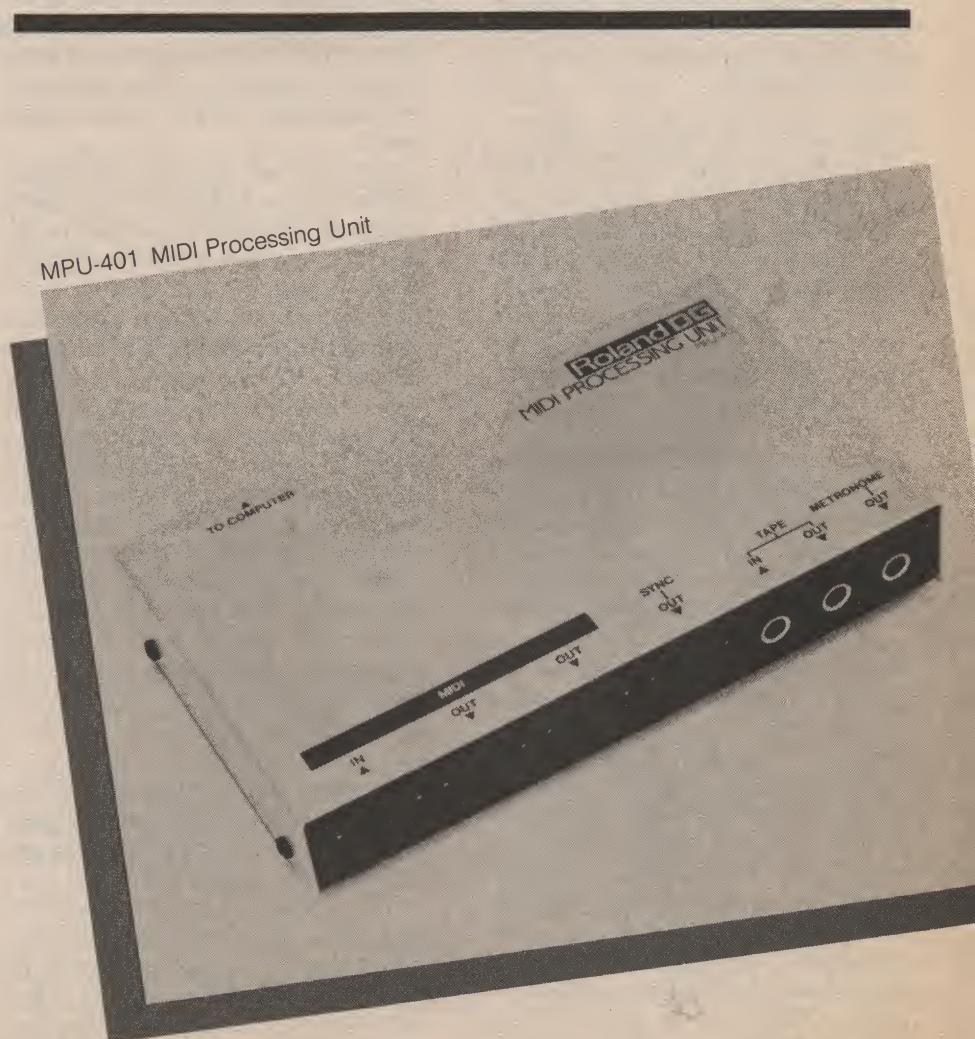
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BOSS (BLACK OR WHITE) SIZE (S, M, L, XL)	6.00		
ROLAND MAKES IT HAPPEN (BLACK OR GRAY, SLEEVELESS HOODED) SIZE (S, M, L, XL)	14.50		
ROLAND MAKES IT HAPPEN (RED, BLUE, OR WHITE, LONG SLEEVE) SIZE (S, M, L, XL)	14.50		
ROLAND MAKES IT HAPPEN (LONG SLEEVE HOODED) (RED, WHITE, BLUE)	20.00		
ROLAND GRAY LONG SLEEVE SWEATSHIRT SIZE (SM, L, XL)	11.00		
ROLAND GRAY SLEEVELESS SWEATSHIRT SIZE (SM, L, XL)	9.00		

TOTAL AMOUNT *(CALIFORNIA RESIDENTS ADD 6.5% SALES TAX)*
(ALLOW FOUR WEEKS FOR DELIVERY)

Sneak Preview

The Research and Development guys never sleep; they must have found a secret formula in biological research that allows endless hours of work without sleep. It's the only explanation for the stream of innovative products they produce. We've just heard about two new winners, the **TR-707 Digital Rhythm Composer** and the **CE-300 Super Chorus.**

The TR-707 may be the most remarkable sounding drum machine ever made by Roland. Roland pioneered the entire concept of the drum machine as we know it. This pioneering experience and new digital sound reproducing technology have combined to create a Rhythm Composer that is both a joy to listen to and a snap to program and use.

All of the TR-707's drum sounds are digital. These sounds combine with a complete mixing section, that has a slider for each instrument, making the TR-707 much easier to use in recording or performance situations than digital drum machines whose instrument volume levels must be programmed when the pattern is created. Each digital sound source has its own audio output in addition to master outputs so that sounds can be individually processed by effects, reverb, equalization, etc.

Patterns and Tracks are created on the TR-707 in the same easy and user-proven manner as other Roland rhythm machines. Up to 64 individual patterns can be created using the TR-707 and these patterns can be used to write complete rhythm tracks with a total memory capacity of 998 measures. Richer and more expressive rhythm patterns can be created using the TR-707's Flam and Shuffle functions. Pattern and Track data can be stored externally in two formats, an audio tape recorder or Roland M-64C Memory Cartridge.

A graphic window similar to the display used on the popular BOSS DR-110 is featured on the TR-707. This display gives the user precise information including the place within the measure that each instrument and accent is programmed, the pattern in use, the track in use and the operating mode of the whole machine.

It's easy to synchronize the TR-707 to a variety of other instruments and sound sources. The unit provides both MIDI In and MIDI Out, as well as Roland's Sync-24 Output. Multitrack recording is easy using the TR-707 Tape Sync. This tape sync uses an audio F.S.K. (Frequency Shift Keying) signal that can be recorded on an available track and later read by the TR-707 which will then coordinate its other function to the F.S.K. A programmable Trigger Out that can be used to synchronize instruments that are not MIDI or Sync-24 equipped.

At a price of only $595, the TR-707 will be selling fast so get down to your Roland dealer and place your order early.

Quietly, without the fanfare it deserves, the BOSS division of Roland has introduced a remarkable new effect, the rack-mounted Super Chorus. The CE-300 Super Chorus incorporates circuits from a variety of Roland chorus effects including the Dimension-D. These circuits are combined with new circuits and new applications to create the most spectacular chorusing device available.

The CE-300 can accept any instrument or vocal feed through its continuously variable input with settings from —20 dB to +5 dB. The chorus effect can be turned off and on from its front panel or via footswitch. Modulation Rate and Depth are also continuously variable. Modulation Rate controls the speed of the chorus cycle. Modulation Depth controls the overall intensity of the chorus effect. A Direct Mute switch on the front panel of the Super Chorus gives the user the option of only hearing the chorus signal by cutting off, muting, the direct signal.

Brilliant chorus effects can be had using the Chorus Tone control on the CE-300. The Chorus Tone controls the tone color of the high frequency range. Increasing the brightness adds a shimmering special effect to the already lustrous Super Chorus. There is a Chorus Level control to adjust the amplitude of the chorus signal in relation to the direct signal. Individual outputs for the direct and chorus signals are available both on the front and back of the CE-300. Input is also available on the front or back panel. Priced at $299, the BOSS CE-300 delivers luxury performance at an economy price.

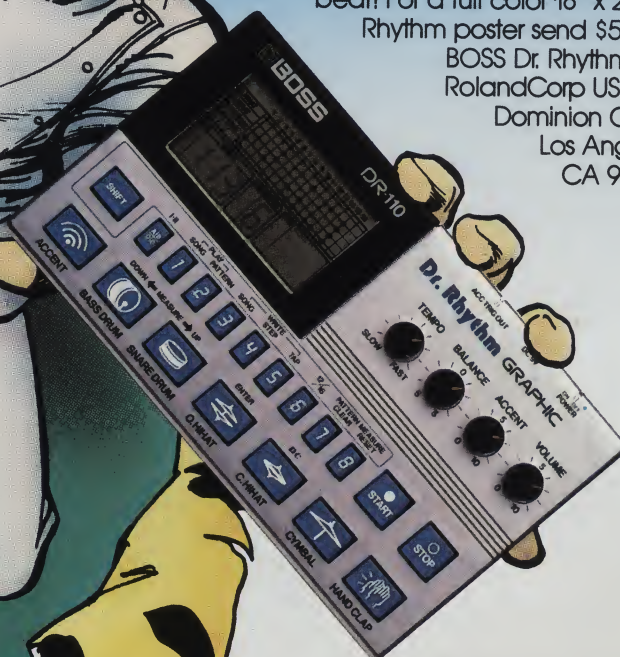*TR-707 Rhythm Composer*

CE-300 Super Chorus

Roland